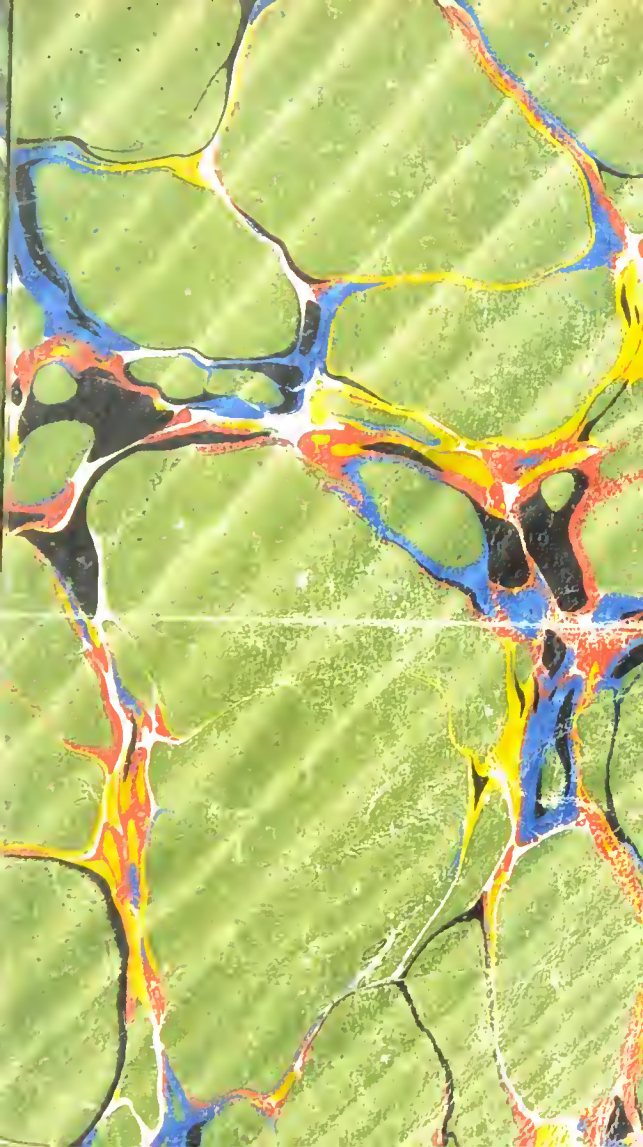








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Mr. Henry Walter -  
Dear Sir and Friend,  
and yours -  
Yours truly  
J. J.

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J. J.



A  
NATURAL HISTORY

OF THE MOST REMARKABLE  
QUADRUPEDS, BIRDS, FISHES, SERPENTS.  
REPTILES, AND INSECTS.

INTERSPERSED WITH  
*Interesting characteristic Anecdotes:*

AND EMBELLISHED WITH UPWARDS OF  
THREE HUNDRED ELEGANT ENGRAVINGS ON WOOD,  
BY MR. S. WILLIAMS.

---

IN TWO VOLUMES.

VOL. II.



A  
NATURAL HISTORY

OF THE MOST REMARKABLE  
QUADRUPEDES, BIRDS, FISHES, SERPENTS,  
REPTILES, AND INSECTS.

BY  
MRS. MARY TRIMMER,

*Author of The History of Man in a Savage and Civilized State, &c.*



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# NATURAL HISTORY

OF

## QUADRUPEDS, BIRDS, FISHES, ETC.

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### THE MARTIN.



THIS bird, "the temple-haunting Martlet," as it is denominated by Shakspeare, is inferior in size to the swallow, and its tail is much less forked. The plumage, however, is nearly the same; the upper part of the body, wings, and tail being black, glossed with purple; and the under parts white. They are much less agile than the chimney swallow, and have a placid easy motion. These birds sometimes build against the sides of cliffs that overhang the sea; but more

frequently under the eaves, in the corners of windows, or under cornices. The materials of the nest are earth, tempered and mixed with straw, and lined with small straws, grasses, and feathers. The little architect builds only during the morning, and allows the fabric to harden during the rest of the day. The same nest is often inhabited for several years.

It would be extremely difficult to bring up these birds in a state of confinement; owing to their subsisting entirely upon insects.

There is a variety called the SAND MARTIN, which forms its nest of grass and feathers in holes in the banks of rivers, or the sides of sand pits. These holes it digs with great expedition, in a serpentine direction, to the depth of not less than two feet. Its motions are capricious, somewhat like those of a butterfly; it appears in this country nearly at the same time as the swallow; and the female lays from four to six white and semitransparent eggs.

### THE SWIFT.

THIS is the largest of the swallow kind known in these climates, being often eighteen inches long, though the entire weight of the bird is not more than one ounce. The whole plumage is of a sooty black, except the throat, which is white. The feet, which are so small that the actions of walking and rising from the ground seem very difficult, are of a particular structure, all the toes standing forward. For this reason the Swift never settles on the ground, unless by accident. They have, however, a strong grasp with their feet, which enables them to cling to walls. It spends more of its time on the wing than any other swallow, and its flight is more rapid. In summer it keeps on the wing at least sixteen hours out of the twenty-four. It breeds

under the eaves of houses, in steeples, and other lofty buildings; and makes its nest of grass and feathers. It has but one brood in the summer, and never more than two young ones at a time.

The voice of the Swift is a harsh scream; yet there are few ears to which it is not pleasing, from an agreeable association of ideas, since it is never heard but in the most lovely summer weather.

These birds visit us the latest, and retire the earliest, of all their tribe; as they withdraw from this country before the middle of August, generally by the tenth, and not a single straggler is to be seen by the twentieth. This early retreat is totally unaccountable, as that time is often the most delightful in the year. But what is yet more extraordinary, they begin to retire still earlier in the most southerly parts of Andalusia; where they can by no means be influenced by any defect of heat, or even of food.

### THE PIED FLYCATCHER.



THIS bird is nearly five inches in length; the bill is black; the eyes are hazel; the forehead is white; the top of the head, the back, and tail are black; the

rump is dashed with ash colour; the wing coverts are dusky, the greater coverts are tipped with white; the exterior sides of the secondary quills are white, as are also the outer feathers of the tail; all the under parts, from the bill to the tail, are white; the legs are black. The female is much smaller, but longer tailed than the male; she is brown where he is black; she likewise wants the white spot on the forehead.

They are most plentiful in Yorkshire, Lancashire, and Derbyshire. They build their nests in holes of trees; the parent birds incessantly feed their young with small flies, which they are very expert in catching.

### THE SPOTTED FLYCATCHER.

ABOUT four inches and three quarters is the length of this species, which has a dusky bill, beset with short bristles; a light brown head and back, obscurely spotted with black; dusky wings and tail, the former of which are edged with white; a white breast and belly; black legs; and a tinge of red on the throat, sides, and feathers under the wings. As it is very fond of cherries, it bears in Kent the name of the Cherry-sucker. It, however, generally feeds on insects, which it catches on the wing. In general, it is supposed to have no song, but it has been heard to warble very pleasingly, with a note between that of the wagtail and the golden-crested wren. The female lays four or five eggs, in a carelessly constructed nest, and the parent birds watch over their offspring with the tenderest care.

## THE CANARY.



THE Canary bird, or Canary Finch, was originally peculiar to those islands from whence the name is derived. They appear to have been first brought into Europe about the middle of the fourteenth century, but they are now so commonly bred in our own country, that they may be easily procured. It is also to be found in the woods of Italy and Greece. It is about five inches and a half in length; the bill is of a pale flesh colour; the plumage is in general yellow, more or less mixed with gray, and in some with brown on the upper parts; the tail is somewhat forked; the legs are a pale flesh colour. In the Canary islands, the plumage is a dusky gray. The song is composed either of the nightingale's or titlark's notes; the bird in its wild state having no song of its own.

There are twenty-nine varieties, and many more might be added to the list. In the places fitted up for the rearing and breeding these charming birds, we are delighted to see the workings of nature exemplified in the choice of their mates, building their nests, hatching and rearing their young, and in the passionate ardour exhibited by the male in assisting his faithful mate in collecting materials for her nest, in

arranging them for her accommodation, in providing food for her offspring, or in chanting his lively and amorous songs during every part of the important business. The Canary will breed freely with the goldfinch and linnet, and the produce is a beautiful bird called a Mule. It also admits, but unwillingly, the chaffinch, yellow hunting, and even the sparrow, though with still more difficulty. In all these instances, excepting the first, the pairing succeeds best, when the female Canary is introduced to the male of the opposite species.

The Canary Finch is a social and familiar bird, and is capable of contracting an attachment for the person to whom it belongs. It will perch on the shoulder of its mistress, and peck its food from her hand or her mouth. It is also capable of being taught still more extraordinary feats. In 1820, a Frenchman exhibited four and twenty Canary birds in London, many of which he said were from eighteen to twenty-five years of age. Some of these balanced themselves, head downward, on their shoulders, having their legs and tail in the air. One of them, taking a slender stick in its claws, passed its head between its legs, and suffered itself to be turned round, as if in the act of being roasted. Another balanced itself, and was slung backward and forward on a kind of slack rope. A third was dressed in military uniform, having a cap on its head, wearing a sword and pouch, and carrying a firelock in one claw: after some time sitting upright, this bird, at the word of command, freed itself from its dress and flew away to the cage. A fourth suffered itself to be shot at, and, falling down as if dead, to be put into a little wheelbarrow, and wheeled away by one of its comrades; and several of the birds were at the same time placed upon a little firework, and continued there quietly, and without alarm, till it was discharged.

## THE LINNET.



THIS favourite bird, which is universally admired for the melody of its voice, it being one of the sweetest of our warblers, is in length, from the point of the bill to the end of the tail, five inches and a half; the bill is a bluish gray, the eyes are hazel, the upper parts of the head, neck, and back, are of a dark reddish brown, the edges of the feathers pale; the under parts are of a dirty reddish white; the breast is deeper than the rest, and in spring becomes a very beautiful crimson, except in the female, whose breast is marked with only stripes of brown; the sides are spotted with brown likewise; the tail is brown, with white edges, except the two middle feathers which have reddish margins, it is somewhat forked; the legs are brown.

The Linnet is so much esteemed for the sweetness of his singing, that, by many persons, he is thought to excel all small birds. He has certainly a curious fine note of his own, little inferior to the most celebrated birds, and may be taught likewise to pipe or whistle

the song of any other bird; but as his own is so good, that trouble is unnecessary. He is, however, very apt in learning, and if brought up from the nest, will take the woodlark's or canary bird's song to perfection. In some instances he has been said to pronounce words with great distinctness.

The cock Linnet may be known, either old or young, by two marks; first, the feathers on his back are much browner than those of the hen; secondly, by the white on the three or four longest feathers of the wing: if it appear clear, bright, and broad, and reach up to the quills, it is a sure sign of a cock bird: for the white in the wing of the hen is much less, fainter, and narrower. In spring, too, as we have already mentioned, the breast of the cock is crimson.

These birds commonly build in a thick bush, or hedge, and sometimes among furze bushes, &c. making a small, pretty nest; the outside, of bents, dried weeds, and straw, and the bottom all matted together; the inside, of fine soft wool, mixed with down stuff, gathered from dried plants, with a few horsehairs, made exceedingly neat and warm: on which she lays four, and sometimes five white eggs, with fine red specks, especially at the blunt end; and has young ones by the middle of April or beginning of May. The young may be taken at ten days old, or sooner; it is necessary, however, that they should be kept very warm, clean, and fed at least once in every two hours. Their food at first should consist of rape seed, soaked eight or ten hours in water, and afterwards boiled in a little milk. They are particularly fond of linseed, from which it is supposed, they derive their name.

## THE SPARROW.



THE Sparrow is one of the most familiar of the winged race, constantly fluttering round our habitations, and even in the streets, and is seldom absent from our orchards and gardens. At the same time it is so crafty that it is not easily ensnared. In its wild state it has no note, but, if taken young, it may be taught to sing. It is a courageous little creature, and will undauntedly combat with birds that are ten times bigger than itself. Occasionally it will intrude into pigeon houses, and, in spite of the opposition of the old pigeons, will force open the naked craw of the young ones, and feed on the half-digested grain. It is universally hated by farmers as injurious to their rural economy; yet its utility has been clearly proved to overbalance its depredations: for it has been known that a single pair of Sparrows, during the time they have to feed their young, have destroyed on an average every week between three and four thousand caterpillars, besides a variety of winged insects, which would be the parents of myriads of caterpillars.

These birds generally build their nests under the eaves of houses, or in holes in the walls; and the affection of the female towards her young is equally

strong and interesting. The nest is formed of hay and straw, and is lined with feathers, and is so placed as to be screened from the sun and rain. The cock Sparrow is distinguished from the hen by a jet black spot under the bill, on a whitish ground.

### THE NUTHATCH.



IN their habits and manners the Nuthatches are nearly allied to the woodpeckers. There are several species of this bird, but only one is found in England, the length of which is five inches and three quarters; the upper mandible is black, and the lower white. The tongue is short, horny at the end, and jagged. All the upper parts of the body are of bluish gray; the cheeks and chin are white; the breast and belly pale orange coloured; and the quills dusky; the tail is short, and consists of twelve feathers, the two middle ones of which are gray, the two outer spotted with white, and the rest dusky. The legs are pale yellow, the claws are large, and the back one is very strong.

This bird is shy and solitary, frequenting the woods, and running rapidly up and down the trees. It often moves its tail like the wagtail. The manners of all the other species very nearly correspond with the European Nuthatch; most of them feed on insects,

and some of them on hazel nuts. The mode in which this bird extracts the kernel from the shell is curious. As it is unable to hold the nut, it wedges it into some crevice, as into a vice, and standing over it, perforates the shell with its bill. This it accomplishes with great quickness and dexterity. The rapping noise which it makes may be heard to a considerable distance.

The female deposits her eggs, six or seven in number, in some hole of a tree, frequently in one that has been deserted by the woodpecker, on rotten wood mixed with moss, and if the entrance be too large, she partly closes it with clay. The Nuthatch does not migrate, but in winter approaches nearer inhabited places, and is sometimes seen in orchards and gardens. It is supposed not to sleep perched, and when it rests it has mostly the head downward, and even with the body.

### THE CHAFFINCH.

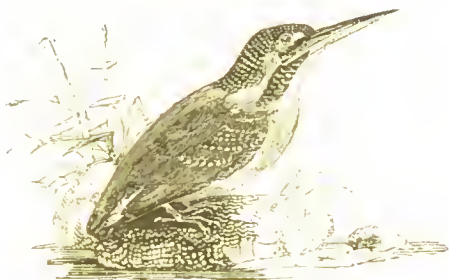


THE bill of this bird is of a pale blue, tipped with black; the eyes are hazel; the forehead is black; the crown of the head, and the hinder part and sides of the neck are of a bluish ash colour; the sides of the

head, throat, fore part of the neck, and the breast are of a vinaceous red ; the belly, thighs, and vent white, slightly tinged with red ; the back is of a reddish brown, changing to green on the rump : both greater and lesser coverts are tipped with white, forming two pretty large bars across the wing ; the bastard wing and quill feathers are black, edged with yellow ; the tail, which is a little forked, is black, the outermost feather edged with white ; the legs are brown. The female wants the red upon the breast ; her plumage in general is not so vivid, and inclines to green ; in other respects it is not much unlike that of the male.

This handsome little bird is every where well known ; it commences its short and repeated song early in the spring, and continues it till about the middle of summer, after which it is heard no more. The female lays generally five or six eggs, of a pale reddish colour, sprinkled with dark spots, principally at the larger end. During the time of hatching, the male is very assiduous in his attendance, seldom straying far from the nest, and then only to procure food. Chaffinches subsist chiefly on small seeds of various kinds ; they likewise eat caterpillars and insects, with which they also feed their young. They are seldom kept in cages, as their song possesses no variety, and they do not readily learn the notes of other birds. The males frequently maintain obstinate combats, and fight till one of them is vanquished, and compelled to give way. In Sweden these birds perform a partial migration ; the females collect in large flocks in the latter end of September, and, leaving their mates, spread themselves through various parts of Europe : the males continue in Sweden, and are again joined by their females, who return in great numbers, about the beginning of April, to their wonted haunts.

## THE KINGFISHER.



THIS bird is the halcyon of the ancients, who believed that, while the female brooded over her eggs, the sea remained unvexed by storms, and thence arose the expression of halcyon days. Though, in consequence of the head and bill being out of proportion to the body, the Kingfisher is somewhat inelegant in shape, it is one of the most beautiful, if not the most beautiful, of British birds. As the bird glances swiftly along, the bright blue of his back and wings changes into deep purple, or brilliant green, according to the angles of light under which he presents himself. He is seven inches in length, and eleven in breadth. The bill is near two inches long, and black, but the base of the lower mandible is yellow. The tongue is fleshy, short, flat, and acute. The top of the head and the sides of the body are of a dark green, marked with transverse spots of blue; the tail is of a deep blue, and the other parts of the body are dusky orange, white, and black; the legs are red; the feet are formed for climbing, two of the toes being backward, and two forward; the wings are short, but they fly very swiftly.

The Kingfisher is found throughout Europe. It preys on the smaller fish, and sits frequently on a branch projecting over the current; there it remains motionless, and often watches whole hours to catch the moment when a little fish springs under its station; it dives perpendicularly into the water, where it continues several seconds, and then brings up the fish, which it carries to land, beats to death, and then swallows; but it afterwards throws up the indigestible parts.

When this bird cannot find a projecting bough, it sits on some stone near the brink, or even on the gravel; but the moment it perceives the fish, it takes a spring upward, of twelve or fifteen feet, and drops perpendicularly from that height. Often it is observed to stop short in its rapid course, and remain stationary, hovering like a hawk, over the same spot for several seconds. Such is its mode in winter, when the muddy swell of the stream, or the thickness of the ice, constrains it to leave the rivers, and ply along the sides of the unfrozen brooks. In this way it traverses many leagues.

This bird lays its eggs, to the number of seven or more, in a hole in the bank of the river or stream that it frequents; the eggs are considerably larger than those of the yellowhammer, and of a transparent white colour.

The feathers of the Kingfisher are employed for many superstitious uses by the Tartars and the Ostiaks, who consider them as amulets of the greatest value, and as enabling them to inspire women with love. Even in more civilized countries it was once believed that if the body of a Kingfisher were suspended by a thread, some magnetic influence would turn its breast to the north. Others also imagined that it would preserve woollen cloths from the moths.

## THE WHEATEAR.



THIS bird weighs upwards of an ounce, and has a slender black bill, about half an inch long; the tongue is cloven or slit, and the inside of the mouth black; the eyes are of a hazel colour, above which there is a white line passing towards the hinder part of the head; and below them, a large black one, which extends itself from the corners of the mouth to the ears. The head and back appear of a cinereous colour, with a mixture of red. The rump is generally white, from whence, by some, it has the name of White-tail; the belly is white, tinged with yellow, dashed faintly with red; the breast and throat are more deep; the coverts and quills are black, with their extreme edges white, tinged with a dusky red; the tail is something more than two inches long, and the upper half of it is black, the lower white. The female wants the black mark across the eyes; the bar of white across the tail is narrower than that of the male; and the general colours are more dull.

The Wheatear visits England annually in the middle of March, and leaves us in September. The females come first, about a fortnight before the males; and they continue to come till the middle of May. In some

parts of England they are found in vast plenty, and are much esteemed. About Eastbourne, in Sussex, they are taken in snares made of horsehair, placed beneath a long turf. As they are very timid birds, the motion even of a cloud, or the appearance of a hawk, will immediately drive them into the traps. These traps are first set every year on St. James's day (July 25); soon after which they are caught in astonishing numbers, considering that they are not gregarious, and that more than two or three are scarcely ever seen flying together. The numbers annually ensnared in the district of Eastbourne alone is said to amount to nearly two thousand dozen. One shepherd has caught eighty-four dozen of them in a day. The birds caught are chiefly young ones, and they are invariably found in the greatest number when an easterly wind prevails; as they always come against the wind.

It is supposed, that the immense swarms of these birds which are found on the downs about Eastbourne, are occasioned by a species of fly, their favourite food, that feeds on the wild thyme, and abounds in the adjacent hills. In England they are held in as much estimation as the ortolan is on the continent. A few of these birds breed in the old rabbit-burrows there. The nest is large, and made of dry grass, rabbit's down, a few feathers and horsehair. The eggs are from six to eight, and are of a light colour.

The ORTOLAN, the great epicurean delicacy of the continent, is common in France and Italy, and in some parts of Germany and Sweden. It has black wings; a greenish head, which is yellow towards the inferior mandible; the first three feathers of the tail are white on the edges, only the two lateral are black outwardly. These birds are caught in numbers, and are kept in a room lighted by lanterns, where they are constantly fed with oats and millet till they become little else than a lump of richly tasted fat.

## THE CROSSBILL.



THIS bird is about the size of a lark, being nearly seven inches in length. It is distinguished by the peculiar formation of its bill, the upper and under coming in opposite directions, and crossing each other at the points. Its eyes are hazel: its general colour is reddish, mixed with brown or green on the upper parts; the under parts are considerably paler, being almost white at the vent, and at certain seasons of the year they change to deep red, orange, or pale yellow; the wings are short, not reaching further than the setting on of the tail, and are of a brown colour; the tail is of the same colour, and somewhat forked; the legs are black. In colour the females are of an olive green, which they change occasionally.

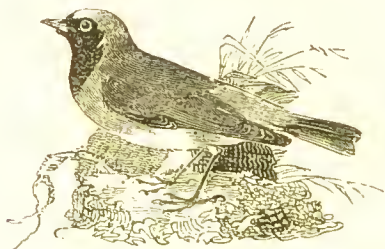
Notwithstanding the apparent awkwardness of their beaks, they are able, by bringing the mandibles point to point, even to pick up and eat the smallest seeds. They live principally on the seeds contained in fir or pine cones, and these they extract with an amazing degree of dexterity and promptitude. While thus engaged, they are so attentive to what they are about, that they will frequently suffer themselves to be caught with horsehair nooses fixed to a fishing rod. This

bird, when kept in a cage, has all the actions of a parrot, climbing by means of his crooked bill, from the lower to the upper bars. He is also very mischievous, and will destroy things merely for amusement.

The Crossbill is an inhabitant of the colder climates, and has been found as far as Greenland. It breeds in Russia, Sweden, Poland, and Germany, in Austria, in the mountains of Switzerland, and among the Alps and Pyrenees, from whence they migrate in vast flocks into other countries. In England they are somewhat rare.

The German birdcatchers generally feed them with poppy and other small seeds; and they shell hemp-seeds in eating them as well as any other birds whatever. As early as January, the female begins to build her hemispherical nest in the bare branches of the pine tree, fixing it with the resinous matter which exudes from that tree, and besmearing it on the outside with the same substance, so that melted snow or rain cannot penetrate it. In this she lays a few whitish eggs, spotted towards the thicker end with red.

### THE REDSTART.



THIS bird measures rather more than five inches in length. Its bill and eyes are black; its forehead is

white, the cheeks, throat, fore part and sides of the neck are black, which colour extends over each eye; the crown of the head, hinder part of the neck, and the back are of a deep blue gray; in some subjects, probably old ones, this gray is almost black; its breast, rump, and sides are of a fine glowing red, inclining to orange colour, which extends to all the feathers of the tail, excepting the two middle ones, which are brown; the belly is white: the feet and claws are black. The female differs considerably from the male, her colours are not so vivid: the top of her head and back are of a gray ash colour, and the chin is white.

The Redstart is migratory: it appears about the middle of April, and departs in the latter end of September, or beginning of October; to what country it retires is not known; it frequents old walls and ruinous edifices, where it makes its nest, composed chiefly of moss, lined with hair and feathers. It is distinguished by a peculiar quick shake of its tail from side to side, on its alighting on a wall or other place. Though a wild and timorous bird, it is frequently found in the midst of cities, always choosing the most difficult and inaccessible places for its residence: it likewise builds in forests, in holes of trees, or in high and dangerous precipices. The female lays four or five eggs, not much unlike those of the hedge-sparrow, but somewhat longer. Should she discover that they have been touched, she immediately forsakes them. These birds feed on flies, spiders, the eggs of ants, small berries, soft fruits, and such like. If taken when old, it is impossible to tame the Redstart, but if caught young, and kept warm during the winter, it may be domesticated, and will pour forth its song, by night as well as by day, with great sweetness and freedom.

## THE BLACKCAP.



THIS bird is rather more than five inches in length, and is of the titmouse kind. The upper mandible is of a dark horn colour; the under one light blue, and the edges of both whitish: the top of the head is black, from which circumstance it derives its name; the sides of the head and back of the neck are ash colour; the back and wings of an olive gray; the throat and breast are of a silvery gray; the belly white; the legs are of a bluish colour; inclining to brown; the claws black. The head of the female is of a dull rust colour.

The Blackcap visits us about the middle of April, and retires in September: it is common in Italy, but in England it is rather a rare bird. It frequents gardens, and builds its nest near the ground; it is composed of dried grass, moss, and wool, and lined with hair and feathers. The female lays five eggs, of a pale reddish brown, sprinkled with darker coloured spots. During the time of incubation the male attends the female, and sits by turns; he likewise procures her food, such as flies, worms, and insects. This bird sings sweetly, and so like the nightingale, that in Norfolk it is called the mock-nightingale. Blackcaps feed chiefly on flies and insects, and not unfrequently on ivy and other berries.

## THE WAGTAIL.



THIS is an elegant slender-bodied bird, and, next to the robin and the sparrow, is the most familiar with man. It weighs about six drachms, and is about seven inches and a half from the tip of the bill to the end of the tail, and about eleven between the point of each wing, when extended. It has a slender, straight, sharp bill, of a black or dusky colour, upwards of an inch long: the circles of the eyes are brown, or hazel coloured, with a large white spot encircling each eye; and another or two underneath it, on each side of the throat; the top of the head and the fore part of the neck, or throat, and the upper part of the back, are all black. Some of the tips of the quill feathers are white, which form a small white line upon the wing, and another is also formed by the white edges of some of the rows of the covert feathers; the lower parts of the breast and belly are both white. The tail is about three inches long, and is almost continually in motion, wagging up and down, from whence it is supposed to derive the name of Wagtail; the outer feathers are chiefly white, the rest black. This motion is supposed to be intended to make the tail act as a kind of lever or counterpoise, to balance the body on the legs. The claws are sharp pointed, and pretty long, of a dusky or blackish colour.

These birds are frequently seen about the brinks of rivers, ponds, and small pools of water, and also amongst the low grass in dewy mornings, where they feed upon flies, worms, beetles, and other small insects. They particularly haunt streams where women come to wash their linen, the insects being attracted thither by the froth of the soap. From this circumstance the French call them *Lavandières*. They build under the eaves of houses, and in holes in the walls of old buildings; laying four or five eggs.

There is another species, called the YELLOW WAGTAIL, from the colour of its head, neck, and back. It is somewhat larger than the common Wagtail, owing to the great length of its tail. It has a dark brown bill, and over each eye a pale streak; the throat and chin are black, and all the under parts of the body are a bright yellow; the wing coverts and quills are dark brown, the former with pale edges; the secondaries, which are almost as long as the greater quills, are white at the base, and tipped with yellow on the outer edges; the middle feathers of the tail are black, the outer ones white, and the legs yellowish brown. The female builds her nest on the ground, and sometimes in the banks of rivulets, laying from six to eight eggs, of a dirty white, marked with yellow spots.

The Wagtails, as some affirm, change their quarters in autumn from the north to the south of England. This, however, cannot uniformly be the case: there being one striking fact, which is in contradiction to this theory. It is certain that they disappear in the autumn, but it is by no means certain that they migrate. Should the sun shine bright in the winter, and the day be a settled fine one, they are sure to reappear, chirping with the utmost briskness, and manifesting not the slightest signs of fatigue. It is obvious, therefore, that, in such cases, they cannot have journeyed from any very considerable distance.

## THE YELLOWHAMMER.



THE Yellowhammer is rather larger than the sparrow. Its head is of a greenish yellow, spotted with brown: the throat and belly are yellow; the breast and sides, under the wings, are mixed with red: and the tail is a flesh colour. These birds build upon the ground, and are common in most parts of England. They have a soft note, not unlike that of a linnet. Their food consists of insects and various kinds of seeds. In Italy they are fattened for the table, and are considered as a great delicacy. The female lays five or six eggs.

## THE TITMOUSE.



THE Titmouse, which is also called the Tomtit, Blue-cap, and Nun, is about four inches and a half in length,

and has a straight black bill about half an inch long, pretty thick. The crown of the head is of a fine blue colour; from the bill to the eyes there is a black line; and the forehead and cheeks are white. The latter colour descends as low as the shoulders and middle part of the back, where it appears more shaded with a glossy green; the rump is of a fine blue. The quill feathers have some of their tips white, some blue, others green; the covert feathers by their white tips make a small transverse white line upon each wing. The breast, belly, and thighs are yellow, with a broad black line passing from the throat down the middle of the breast to the vent. The tail is about two inches and a half long, of a black colour, except the outward edges of some of the feathers which are blue. The legs and feet are a sort of lead colour.

These birds feed on insects, seeds, and fruit. They often excite alarm in the owners of gardens, under the idea that they are destroying the buds, while in fact, they are engaged in the beneficial operation of seeking for the caterpillars that infest them. They are very prolific, laying from fourteen to twenty eggs at a time. If the eggs be touched, the female forsakes her nest, and builds again. Titmice will venture to assault birds that are twice or thrice their own bulk, and in this case they direct their aim chiefly at the eyes. They often seize upon birds that are weaker than themselves; which they kill, and having picked a hole in their skull, eat out their brains. This bird is distinguished above the rest of its kind, by its rancour against the owl.

There are many varieties of this bird; the GREATER TITMOUSE is about five inches in length. The nests of almost every kind are constructed with the most exquisite art, and with materials of the utmost delicacy; such as moss, hair, and the web of spiders, with which the whole is strongly tied together.

## THE PARROT.



THE Parrot, of which there are many species, is said to have been first introduced into Europe by Alexander the Great. Of the foreign birds it is the one with which we are best acquainted, and is likewise one of the most beautiful of the feathered race, its plumage being exceedingly varied, and of the most vivid hues. But its chief attraction is to be found in its ability to utter articulate sounds, a gift which it possesses in far greater perfection than any other bird. Its voice also is more like a man's than any other; the raven is too hoarse, and the jay and magpie too shrill to resemble the truth: but the Parrot's note is of the true pitch, and capable of a variety of modulations. For this it is indebted to the form of its bill, tongue, and head. "Its bill, round on the outside and hollow within, has in some degree, the capacity of a mouth, and allows the tongue to play freely; and the sound, striking against the circular border of the lower mandible, is there modified as on a row of teeth, while the concavity of the upper mandible reflects it like a

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palate : hence the animal does not utter a whistling sound, but a full articulation. The tongue, which modulates all sounds, is proportionably larger than in man ; and would be more voluble, were it not harder than flesh, and invested with a strong horny membrane." In addition to the talent of speech, the Parrot is endowed with a strong memory, and with more sagacity than is the lot of most other birds.

In their native woods these birds live together in flocks, and generally breed in hollow trees, where they make a round hole for the accommodation of their young ; but do not take the trouble of lining it within. The female lays two or three eggs, about the size of those of a pigeon, and marked with little specks. The natives are very assiduous in seeking out their nests, and usually take them by cutting down the tree. By this means, indeed, the young Parrots are liable to be killed ; but if one of them survive, it is considered as a sufficient recompense. The old ones are shot with heavy arrows headed with cotton, which knock them down without killing them.

The facility with which the Parrot is taught to speak, and the great number of sentences it is capable of repeating, are equally surprising. But its agreeable qualities are counterbalanced by the mischievous inclination it has to gnaw whatever it can reach.

The food commonly given to these birds consists of hemp seed, nuts, fruits of every kind, and bread soaked in wine ; they would prefer meat, but that kind of aliment has been found to make them dull and heavy, and to cause their feathers to drop off after some time. It has been observed, that they keep their food in a kind of pouch, from which they afterwards throw it up in the same manner as ruminating animals.

## THE PARROQUET.



This bird has a longer tail than the Common Parrot, and is less in size. It also speaks with less facility, and is even more easily tamed. The handsomest species is the RING PARROQUET, which has a red circle encompassing the back of the neck, and ending under the lower chap of the bill. Its head and body are green, but of a fainter hue on the neck, breast, and whole of the under side; the belly being of so slight a green as to seem almost yellow.

## THE COCKATOO.



THE Cockatoo is a beautiful bird of the parrot kind: but is distinguished from the parrot by his head being

adorned with a crest of long feathers, which is capable of being erected or lowered at pleasure, and gives the bird a strikingly fine appearance. His plumage is white; the inside feathers of the crest are of a pleasing yellow colour; and his beak is round and crooked. It is a native of the Molucca Islands and other parts of the East Indies, where it is frequently known to build on the tops of houses. Like the rest of the parrot kind, it is capable of uttering sea phrases and sentences, with equal propriety of tone and volubility. It derives its name from its frequent repetition of the syllables Cockatoo.

### THE HOOPOE.



THE length of this bird is twelve inches, and the breadth nineteen. The bill is above two inches long, black, slender, and somewhat curved; the tongue very short and triangular; the eyes are hazel; the head is ornamented with a crest, consisting of a double row of feathers, of a pale orange colour, tipped with black, the highest about two inches in length;

this, which reaches from the bill to the top of the neck, the animal can raise or let fall at pleasure; the neck is of a pale reddish brown; the breast and belly are white, and, in the young ones, are marked with various dusky lines, pointing downwards; the back, scapular, and wings, are crossed with broad bars of black and white; the lesser coverts of the wings, light brown; the rump is white; the tail consists of ten feathers, each marked white, which, when closed, assume the form of a crescent, the horns pointing downwards: the legs are short and black. There is only one species of this bird found in this kingdom, and even that is not very common, being seen only at uncertain periods.

The female is said to have two or three broods in the year: she makes no nest, but lays her eggs in the hollow of a tree, and sometimes in a hole in a wall, or even on the ground. It is a solitary bird, two of them being seldom found together, and, indeed, is not often seen very singly in this country. In Egypt, where they are very common, they are seen only in small flocks.

### INDIAN BEE-EATER.

THE Indian Bee-eater, is about the size of a common blackbird. Its bill is nearly two inches long, and its eyes are of a fine red; on each side of the head extends a black stroke, which begins at the corners of the mouth, and passes beyond the eyes. The base of the upper chap, and under the chin, is covered with bright pale blue feathers; the upper and back part of the head are of a dusky yellow; the back and wings of the same colour, only shaded pretty strongly with a green; the tips of the quill feathers brown, the breast and belly green; the thighs and under part near the vent, of a pale yellow, with a small green

mixture. The tail consists of about twelve feathers ; the outermost on each side are of a green and yellow mixture, about three inches in length ; the two middlemost twice that length, ending in sharp points, of a brown or dusky colour ; the legs and feet black.

They principally feed on bees, beetles, grasshoppers, and other insects. They build in hollow places or caverns five or six feet deep, and lay six or seven eggs.

### THE HUMMINGBIRD.



OF this curious little bird there are six or seven varieties, from the size of a small wren down to that of a humblebee. Their principal food is the honey which they extract, while on wing, from the bottom of tubular shaped flowers. The smallest Hummingbird is about the size of a hazel nut. The feathers on its wings and tail are black ; but those on its body and under its wings are of a greenish brown, with a fine red gloss, which no silk or velvet can imitate. The bill is black and slender, and the head is adorned with a small crest, which sparkles in the sun like a little star in the middle of the forehead. The larger Hummingbird, which is nearly half as big as the wren, is without a crest : but to make amends it is covered from the throat half way down the belly, with ruby

coloured feathers, which, in some lights, are as bright as fire. The heads of both are small, with little round eyes, as black as jet.

It is inconceivable how much these little creatures add to the high finishing of a luxuriant western landscape. In the West Indies and South America, as soon as the sun has risen, the Hummingbirds of different kinds are seen fluttering about the flowers, without ever alighting upon them, visiting flower after flower, and extracting its nectar, as if with a kiss: while the motion of their wings produces a humming sound, which first gave rise to their name. The vibration of their wings is so rapid that the eye cannot follow it, and their flight is so swift that it is like the glance of lightning.

The nests of these birds, which are about the size of a hen's egg cut in two, are not less curious than the rest: they are suspended in the air, at the point of the twigs of an orange, a pomegranate, or a citron tree; and are composed of cotton, fine moss, and the fibres of vegetables. The females lay two eggs about the size of small peas, and as white as snow, with here and there a yellow speck; and at the end of twelve days the young ones appear. They are hatched by the sitting of the male and female alternately. They are at first bare, but are gradually covered with down, and at last with feathers.

Small as the Hummingbird is, it has great courage and violent passions. If it find that a flower has been deprived of its honey, it will pluck it off, throw it on the ground, and sometimes tear it to pieces; and it often fights with a desperate fury which is astonishing in a creature of such diminutive size. It will even allow a man to come within two yards of it before it will take to flight. Hummingbirds are caught by blowing water on them from a tube, or shooting at them with sand.

## THE BIRD OF PARADISE.



THE Bird of Paradise tribe, of which there are about eight species, has been the subject of many fabulous descriptions, all of which are now exploded. Among other things, the egg was said to be produced in the air by the female, and to be hatched by the male in an orifice of its body: that so wonderful an origin might not be derogated from, the bird was affirmed to be produced without legs; to hang itself by the two long feathers of the tail to a tree when sleeping: to live wholly on dew; and never to touch the ground from the commencement to the close of its existence. That all this has a poetical air there can be no doubt; but it is utterly devoid of truth.

The name of this beautiful creature, we may fairly suppose, was given to him on account of his being

generally seen on the wing, and flying in the tropic zone at a small distance from the land. Its appearance, being most welcome to the tired sailor and longing passenger, generally causes much happiness by its foretelling the vicinity of terra firma. The head is small, but adorned with colours which can vie with the brightest hues of the peacock's embellishments; the neck is of a fawn tint, and the body very small, but covered with long feathers of a browner hue, tinged with gold; two feathers issue from the rump, and constitute the tail. These volatiles, whose beauty exceeds that of all others, are natives of the Molucca Islands, and are frequently seen in large flocks among the delightful and spicy woods of that country. The GREATER BIRD OF PARADISE, of which there are two varieties, breeds in New Guinea, and lives there during the wet monsoon, but during the dry monsoon it inhabits the islands of Arron, about a hundred and forty miles eastward. They migrate in flocks of thirty or forty, and have a leader which the Indians call the King. He is described as being black, with red spots, and as soaring far above the flock, which never quit him, but always settle where he does.

The Bird of Paradise never flies with the wind, because, if it did so, its loose plumage would be decomposed and blown over its head. Should a heavy gale come on, it directs its flight to a loftier region, and leaves the tempest beneath it.

The usual method of taking these birds is by shooting them with blunt reed arrows; after which their legs are amputated; their entrails taken out, and their bodies filled with spices, preparatory for sale to the Europeans.

This bird's feathers have long formed a favourite ornament of the South American ladies, and have recently become so with the British fair.

## THE TOUCAN.



THIS curious bird is almost twenty inches in length ; the bill is six inches long, and near two inches thick at the base, being of a yellowish green colour, reddish at the tip. The nostrils are at the base of the bill, but are not covered with feathers, as in some of the species. The principal upper parts of the body, and the breast and neck, are of a glossy black, with a tinge of green ; the lower part of the back, the rump, upper part of the tail, and small feathers of the wings are the same, with a cast of ash colour : the breast is of a fine orange. The belly, sides, thighs, and the short feathers of the tail are a bright red ; the remainder of the tail is of a greenish black, tipped with red. The legs and claws are black. This bird is easily tamed, and will become very familiar, and eat almost any thing offered to it ; in general it feeds on fruits. In its wild state it is a noisy bird, and is perpetually moving from place to place, in quest of food, going

northward or southward, as the fruits ripen. Of grapes it is very fond.

The Toucan builds its nest in the holes of trees, that are either formed by itself, or that from accident it meets with, and lays two eggs; and no bird better secures its young from external injury. It has not only birds, men, and serpents to guard against, but a numerous train of monkeys, still more prying, mischievous, and hungry, than all the rest. The Toucan, however, sits in its hole, defending the entrance with its great beak; and if the monkey venture to offer a visit of curiosity, the Toucan gives him such a welcome, that he is soon glad to make his escape.

This bird is a native of Guiana and Brazil, and is said to be in great request in South America; both from the delicacy of its flesh, and on account of the beauty of its plumage, particularly the feathers of the breast. The skin of this part the Indians pluck off, and, when dry, glue to their cheeks, and this they consider as an irresistible addition to their beauty. The female lays two eggs, and, it is probable, they have more than one brood in the year.

The Toucan may be easily tamed, and in its domestic state will eat of almost any thing that is given to it. Grapes, however, seem to be one of its most favourite articles of food. If these are plucked from the stalk, one by one, and thrown to it, the Toucan will catch them with great dexterity before they fall to the ground.

These birds when in flocks, on retiring to rest, generally appoint one to watch during the night. While they are asleep he sits perched at the top of a tree, above them, and makes a continual noise, resembling ill articulated sounds, moving also his head, during the whole time, to the right and left. For this reason the South Americans give to the Toucan the name of Preacher Toucan.

## THE PELICAN.



ALL birds that haunt the water may be considered as falling under three natural divisions, viz. those of the Gull kind, that with long legs and round bills fly along the surface, to seize their prey;—those of the Penguin kind, that with round bills, short wings, and legs hid in the abdomen, dive in quest of food;—and lastly, those of the Goose kind, with flat broad bills, that lead harmless lives, and chiefly subsist upon insects and vegetables.—In the artificial classification of Linnæus, the whole of these come under the sixth order, that of Swimmers.—In describing the birds of these classes, therefore, we shall put the most remarkable of each at the beginning of their respective tribes, and the more ordinary sorts will naturally follow. We must, however, previously give the history of the above bird, which, from the singularity of its conformation, seems allied to neither of those divisions.

The White or Great Pelican, or Pelecan, resembles the swan in shape and colour, but exceeds it in size. The singularity, however, which distinguishes it from all other birds, is in the bill and the great pouch underneath, which merit a particular description.

The bill of this bird is about sixteen inches long, from the point to the opening of the mouth, which is a good way behind the eyes. It is very thick at the base, where it is of a greenish tint, but tapers off towards the end, which curves downward, and is of a reddish blue. At the lower edge of the under chap hangs a pouch, capable of containing fifteen quarts of water, and reaching the whole length of the bill to the neck: this bag is covered with a very soft and smooth down, and, when empty, is scarcely perceptible; as the bird has the power of wrinkling it up into the lower jaw. This bird was formerly known in Europe, particularly in Russia; but at present it is only found in Africa and America.

The Pelican has strong wings furnished with thick plumage of an ash colour, as are the rest of the feathers over the whole body. The legs are lead coloured, and the claws gray. The number of toes is four, and these are all webbed together. The eyes are very small, when compared with the size of the head, and there is something in the countenance very sad and melancholy.

These birds are torpid and inactive to the last degree, so that nothing can exceed their indolence but their gluttony; for were they not excited to labour by the stimulus of hunger, they would always continue in fixed repose. They will often sit for whole days and nights on rocks and branches of trees, motionless, and in a melancholy posture, till the cravings of the stomach compel them to seek for food. When they have raised themselves about thirty or forty feet

above the surface of the sea, they turn their head with one eye downward, and continue to fly in that posture. As soon as they perceive a fish sufficiently near the surface, they dart down with the swiftness of an arrow, seize it with unerring certainty, and store it up in their pouch: they then rise again, and continue hovering and fishing, till their bag is filled; when they retire to land, and greedily devour the fruits of their industry. They then sink to sleep, and remain inert till again obliged to provide for their subsistence.

The same habits of indolence seem to attend the Pelican in every situation; for the female does not prepare for the duties of incubation, but drops her eggs on the bare ground, to the number of five or six, and there contrives to hatch them. It is a mere poetical fiction that the Pelican feeds her young with blood from her own breast. Her little progeny, however, seem to call forth some maternal affections: for its young have been taken and tied by the leg to a post, and the parent bird has been observed for several days to come and feed them; remaining with them the greatest part of the day, and spending the night on the branch of a tree that hung over them. By these means they became so familiar that they suffered themselves to be handled; and they very readily accepted whatever fish was given to them. These they always put first into their pouch, and then swallowed them at leisure.

Notwithstanding their natural indolence and stupidity, these birds appear to be susceptible of instruction in a domestic state. Some of them have been known to go off at the word of command, and return to their owners with their pouches distended with plunder.

It is said that, when the Pelican and the cormorant fish in company, they adopt a singular mode of catching their prey. They form a large circle, at some

distance from the land, and, while the Pelicans flap their wings above, the cormorants dive beneath. The fish are thus driven before the birds, who lessen the circle as they approach the land, and thus enclose their finny spoil within a narrow space, so as to have no difficulty in seizing on a sufficient number.

### THE CORMORANT.



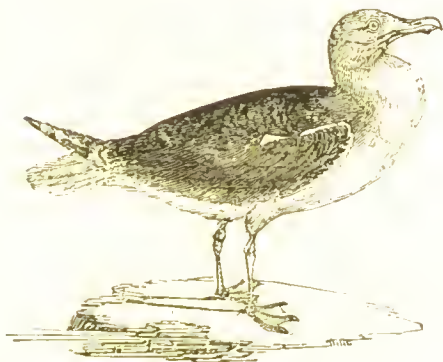
THE Cormorant, or Corvorant, weighs about seven pounds, and is nearly the same size as a goose. The head and neck are of a sooty blackness, and the body is thick and heavy, more inclining in figure to that of the goose than the gull. Its distinguished character, however, consists in its toes being united by membranes, and by the middle toe being notched, like a saw, to assist it in holding its fishy prey.

On the approach of winter, these birds are seen dispersed along the seashore, and ascending the mouths of rivers, carrying destruction to all the finny tribe

as they are remarkably voracious, and have such a quick digestion, that their appetite appears completely insatiable. Their intestines being thronged with small worms may, perhaps, contribute to their insatiable craving for food. They build their nests on the highest parts of the cliff's that overhang the sea; and the female usually lays three or four eggs, about the size of those of the goose, and of a pale green colour.

In China these birds are bred up tame, for the purposes of fishing, and one man can easily manage a hundred of them. When a fisherman intends to fish, he carries them out into the lake, perched on the gunnel of his boat, where they continue tranquil, and expect his orders with patience. When arrived at the proper place, each flies a different way, on a given signal, to fulfil the task assigned it. and it is very pleasant on this occasion to behold with what sagacity they portion out the lake or canal where they are upon duty. They hunt about, they plunge, they rise a hundred times to the surface, until they have at last found their prey. They then seize it with their beak by the middle, and carry it to their master. When weary they are suffered to rest for a while, but they are never fed till their work is over. In this manner they supply a very plentiful table: but still their natural voracity cannot be restrained even by education. While they fish, they have always a string fastened round their throats, to prevent them from devouring their prey; as otherwise they would soon satiate themselves, and then discontinue their pursuit. Such was formerly the practice in England; and as late as the reign of Charles I. there was an officer of the household who bore the title of Master of the Cormorants.

## THE BLACK AND WHITE GULL.



GULLS frequent principally the northern countries, and do not dive so much as the other waterfowl; they chiefly subsisting on the gregarious fish which they catch near the surface of the water. When the sea is rough, they come into the harbours, and feed on worms. Occasionally they will even eat carrion. They fly with great rapidity; their body being light, and their wings long. It is not until the third year that the young birds acquire the same colour as the old.

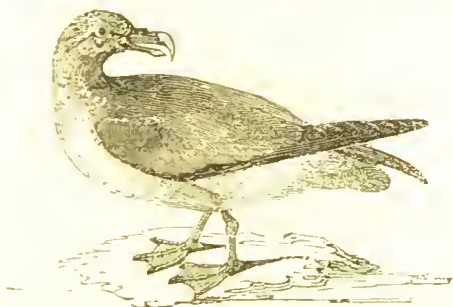
The Black and White Gull is by far the largest of all the Gull kind, as it generally weighs upwards of four pounds, and is twenty-five or twenty-six inches, from the point of the bill to the end of the tail; and from the tip of each wing, when extended, five feet and several inches. The bill appears compressed sideways, being more than three inches long, and hooked towards the end, like the rest of this kind, of a sort of orange colour; the nostrils are of an oblong form; the mouth is wide, with a long tongue and very open

gullet. The irides of the eyes are of a very delightful red. The wings and the middle of the back are black, only the tips of the covert and quill feathers are white. The head, breast, tail, and other parts of the body are likewise white. The tail is near six inches long, the legs and feet are flesh coloured, and the claws black. There are about twenty varieties of this tribe, which are all distinguished by an angular knob on the chap.

Gulls are found in great plenty in every place; but it is chiefly round our rockiest shores, that they are seen in the greatest abundance; it is there that the Gull breeds and brings up its young; it is there that millions of them are heard screaming with discordant notes for months together.

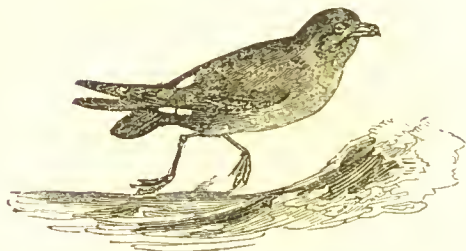
These birds, like all others of the rapacious kind, lay but few eggs; and hence in many places, their number is daily seen to diminish. The lessening of so many rapacious birds may, at first sight, appear a benefit to mankind; but when we consider how many of the natives of our islands are sustained by their flesh, either fresh or salted, we shall find no satisfaction in thinking that these poor people may in time lose their chief support. The Gull usually builds on the ledges of rocks, and lays from one egg to three, in a nest formed of long grass and seaweed. It defends its young with great intrepidity. When the natives of the Fero Islands attempt to plunder the nest, the parent birds attack them with such vehemence that, on the men holding a knife perpendicularly above their own heads, the Gulls will sometimes transfix themselves in pouncing on the invaders. Most of the kind are fishy tasted, with black stringy flesh; yet the young ones are better food; and of these, with several other birds of the penguin kind, the poor inhabitants of our northern islands make their wretched banquets. They have been long used to no other food; and even a salted Gull can be relished by those who know no better.

## THE FULMAR.



THE Petrel tribe have all the curious faculty of spouting from their bills a large quantity of pure oil, and to a considerable distance. This they do into the face of any one who attempts to annoy them. The Fulmar is the largest of the petrel kind which is known in these climates. It is superior to the size of the common gull, being about fifteen inches in length, and seventeen ounces in weight. It has a very strong yellow bill, hooked at the end. The head, neck, and all the under parts of the body are white; the back and wings ash coloured, the quills dusky, and the tail white. It feeds on the blubber of whales, which supplies the reservoir, whence it spouts, with a constant stock of ammunition. This oil is esteemed by the inhabitants of the north as a sovereign remedy in many complaints, both external and internal. The flesh is also considered by them as a delicacy, and the bird is therefore in great request at St. Kilda. It is said that when a whale is taken, these birds will, in defiance of all endeavours, light upon it, and pick out large lumps of fat even while it is alive.

## THE STORMY PETREL.

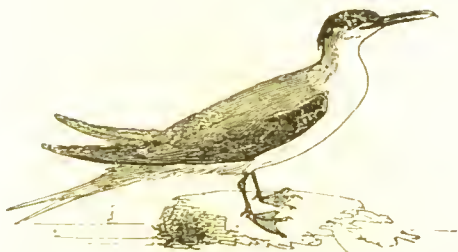


THE Stormy Petrel is not larger than a swallow ; it has long and slender legs ; and is entirely black ; except the coverts of the tail, the tail itself, and the vent feathers, which are white.

It is found in almost every sea, frequently at a vast distance from the land, and braves the utmost fury of the storm, sometimes skimming with incredible velocity along the hollows of the waves, and sometimes over their summits. It is also an excellent diver, and often follows vessels to pick up any thing that is thrown overboard. By the sailors, who look upon the appearance of these birds as a sure presage of stormy weather in the course of a few hours, they are called *Mother Carey's Chickens*. The Petrel seems to seek for protection from the fury of the wind, in the wake of the vessels : and for the same reason it very probably is, that it often flies along between two surges. The nests of these birds are found in the Orkney Islands, under loose stones, in the months of June and July. They live chiefly on small fish ; and although mute by day, are very clamorous during the night.

There are about twenty species of foreign birds of this kind, among them is the *NORFOLK ISLAND PETREL*, which burrows in the sand like a rabbit.

## THE GREAT TERN.



This bird is about fourteen inches long, and weighs four ounces and a quarter. The bill and feet are a fine crimson, the former is tipped with black, and very slender. The back of the head is black; the upper part of the body is a pale gray, and the under part white. They have been called sea swallows, from appearing to have all the same actions at sea that the swallow has on land, seizing every insect which appears on the surface, and darting down upon the smaller fishes, which they seize with incredible rapidity.

The LESSER TERN weighs only two ounces five grains. The bill is yellow, and from the eyes to the bill is a black line: in other respects it almost exactly resembles the preceding.

The BLACK TERN is of a middle size between the two preceding species. It weighs two ounces and a half. It receives its name from being all black as far as the vent, except a white spot under the throat. This bird is called in some parts the Car Swallow. It is very noisy.

Among the foreign birds of this tribe, the most singular is the STRIATED TERN, which is a native of New Zealand. It has a black bill, and the body is in general mottled, or rather striped with black and white. Its length is about thirteen inches.

## THE GREAT AUK.

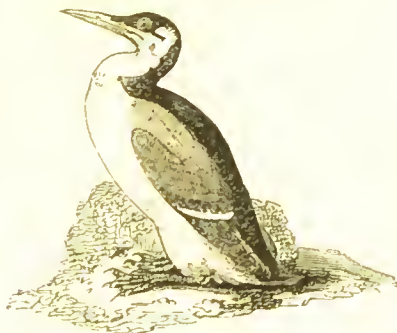


THIS bird is of the size of a goose ; its bill is black, and covered at the base with short velvetlike feathers. The upper parts of the plumage are black, and the lower parts white, with a spot of white between the bill and the eyes, and an oblong stripe of the same on the wings, which are too short for flight. It is a very bad walker, but swims and dives well. It is, however observed by seamen, that it is never seen out of soundings, so that its appearance serves as an infallible direction to land. It feeds on the lump-fish, and others of the same size ; and is frequently seen on the coasts of Norway, Greenland, Newfoundland, &c. The female lays but one egg, which she hatches on a ledge, close to the seamark.

There is another bird of this description, called the PENGUIN, of which there are several varieties, which seems to hold the same place in the southern parts of the world, that the Auks do in the northern ; being only found in the temperate and frigid zones of the

southern hemisphere. It resembles the former in almost all its habits: walking erect, and being very stupid: it also resembles it in colour, shortness of wings, rapidity of swimming, mode of feeding, and of making its nest. These birds hatch their young in an erect position; and cackle like geese, but in a hoarser tone. The most remarkable kind is the CRESTED PENGUIN, which inhabits several of the South Sea islands, and which is sometimes called the Hopping Penguin, or Jumping Jack, from the circumstance of its leaping quite out of the water, sometimes to the height of three or four feet, when it meets an obstacle in its course.

### THE GUILLEMOT.



THIS bird is about the size of a common duck; the upper parts of the body are of a dark brown colour inclining to black, except the tips of some of the wing feathers which are white; all the under parts of the body are likewise white. The tail is about two inches long.

The LESSER GUILLEMOT weighs about sixteen ounces. The upper parts of its plumage are darker than those of the former species. The BLACK GUILLEMOT is entirely black, except a large mark of white on the wings. In winter, however, this bird is said to change to white; and there is a variety in Scotland not uncommon, which is spotted, and which has been described under the name of the SPOTTED GREENLAND DOVE. The MARBLED GUILLEMOT, which is a native of Kamtschatka, &c. received its name from its plumage, which is dusky, elegantly marked with white.

These are simple birds and easily taken. So excessively stupid, indeed, is the Guillemot, that though it sees its companions killed all around it, it will not quit the rock on which it has taken its stand.

The Guillemots form one division of the Diver tribe. Of the other branch of this tribe, the NORTHERN DIVER, or LOON, and the CHINESE DIVER, are the two most remarkable species. The former of these chiefly inhabits the northern seas, and is common on the coast of Scotland, and has a form admirably adapted for the operation from which it receives its name; the latter is employed by the Chinese in catching fish. They generally join company with other birds, and breed on the inaccessible rocks, and steep cliffs, in the Isle of Man, and likewise in Cornwall; on Prestholm Island, near Beaumaris in the Isle of Anglesey; also on the Fern Island, near Northumberland, and in the cliffs about Scarborough, in Yorkshire; and several other places in England. They lay exceedingly large eggs, being full three inches long, blunt at one end, and sharp at the other, of a sort of bluish colour, generally spotted with some black spots or strokes.

## THE PUFFIN.



THE Puffin appears on our coasts about the beginning of April, and is about twelve inches in length; the eyes are ash coloured or gray; the upper part of the head and body are black; the lower parts white; it has a sort of black ring that encompasses the throat; the sides of the head are whitish, with a cast of yellow, or ash colour; the wings are made up of short feathers, and are very small; they fly swift while they keep near the surface of the water, on account of wetting their wings as they proceed. They have black tails, about two inches long, their legs and feet are of an orange colour, and their claws of a dark blue.

The bill is flat: but, very different from that of a duck, its edge is upwards. It is of a triangular figure, and ending in a sharp point; the upper chap bent a little downward, where it is joined to the head: and a certain callous substance encompasses its base, as in parrots. It is of two colours; ash coloured near the base, and red towards the point. It has three furrows or grooves impressed in it; one in the livid part, two in the red. The eyes are fenced with a protube-

rant skin, of a livid colour; and they are gray or ash coloured.

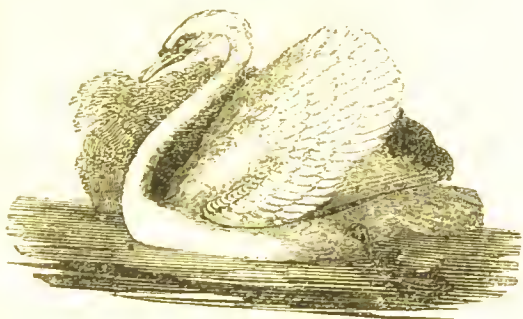
This bird, like the rest of the auk kind, has its legs thrown so far back, that it can hardly move without tumbling. This makes it rise with difficulty, and subjects it to many falls before it gets upon the wing; but as it is a small bird, not much bigger than a pigeon, when it once rises, it can continue its flight with great celerity.

The Puffins build no nest: but lay their eggs either in the crevices of rocks, or in holes under ground near the shore. They generally choose the latter situation. Relying on its courage, and the strength of its bill, with which it bites most keenly, it either makes or finds a hole in the ground, wherein to lay or bring forth its young. It lays only one egg.

The males perform the office of sitting, and relieving their mates when they go to feed. The young are hatched in the beginning of July. When they are excluded, the parent's industry and courage are incredible. Few birds or beasts will venture to attack them in their retreats. When the great searaven comes to take away their young, the Puffin boldly oppose him, and a singular combat takes place. As soon as the raven approaches, the Puffin catches him under the throat with its beak, and sticks its claws into his breast, which makes the raven, with a loud screaming, attempt to get away; but the little bird still holds fast to the invader, nor lets him go till they both come to the sea, where they drop down together, and the raven is drowned; yet the raven is but too often successful, by invading the Puffin at the bottom of its hole, and so devouring the Puffin and its family.

The Kamtschadales and Kuriles wear round their necks the bills of Puffins, in the belief that, while they continue to do so, good fortune will be sure to attend them.

## THE SWAN.



So much difference is there between this bird when on land and in the water, that it is hardly to be supposed the same, for in the latter, no bird can possibly exceed it for beauty and majestic appearance. When it ascends from its favourite element, its motions are awkward, and its neck is stretched forward with an air of stupidity; it has, indeed, the air of being only a larger sort of goose: but when seen smoothly gliding along the water, displaying a thousand graceful attitudes, and moving at pleasure without the smallest apparent effort, there is not a more beautiful figure in all nature. In its form, we find no broken or harsh lines; in its motions, nothing constrained or abrupt; but the roundest contours, and the easiest transitions; the eye wanders over the whole with unalloyed pleasure, and with every change of position every part assumes a new grace. It will swim faster than a man can walk.

This bird has long been rendered domestic; and it is now a doubt whether there be any of the tame kind in a state of nature. The colour of the tame Swan is

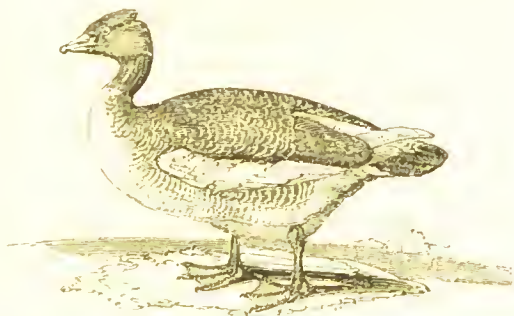
entirely white, and it generally weighs full twenty pounds. Under the feathers is a very thick soft down, which is made an article of commerce, for purposes of both use and ornament. The windpipe sinks down into the lungs in the ordinary manner; and it is the most silent of all the feathered tribes; it can do nothing more than hiss, which it does on receiving any provocation. In these respects it is very different from the wild or whistling Swan.

This beautiful bird is as delicate in its appetites as it is elegant in its form. Its chief food is corn, bread, herbs growing in the water, and roots and seeds, which are found near the margin. At the time of incubation it prepares a nest in some retired part of the bank, and chiefly where there is an inlet in the stream. This is composed of water plants, long grass, and sticks: and the male and female assist in forming it with great assiduity. The Swan lays seven or eight eggs, white, one every other day, much larger than those of a goose, with a hard, and sometimes a tuberosus shell. It sits six weeks before its young are excluded; which are ash coloured when they first leave the shell, and for some months after. It is not a little dangerous to approach the old ones, when their little family are feeding round them. Their fears, as well as their pride, seem to take the alarm, and when in danger, the old birds carry off the young ones on their back. A female has been known to attack and drown a fox, which was swimming towards her nest; they are able to throw down and trample on youths of fifteen or sixteen; and an old Swan can break the leg of a man with a single stroke of its wing.

Swans were formerly held in such great esteem in England, that, by an act of Edward the Fourth, none, except the son of the king, was permitted to keep a Swan, unless possessed of a freehold to the value of five marks a year. By a subsequent act, the punishment for taking their eggs was imprisonment for a

year and a day, and a fine at the king's will. At present they are not valued for the delicacy of their flesh; but numbers are still preserved for their beauty. Many may be seen on the Thames, where they are esteemed royal property, and it is accounted felony to steal their eggs. On this river, as far as the conservancy of it belongs to the city, they are under the care of the corporation; and at certain times the lord mayor, the aldermen, &c. proceed up the Thames, to what is commonly called the Swan-hopping, to mark the young birds. The Swan is a long-lived bird, and sometimes attains the age of a hundred years.

### THE GOOSE.



WILD GEESE abound in the fens of Lincolnshire, Cambridgeshire, and several other counties of England, and are not supposed to migrate in this country, as in some parts of the Continent. During the day they seldom rest, and are seen flying at a great height, in flocks of from fifty to a hundred. So lofty is their flight that they are often heard when they are invisible; and it is conducted with the utmost regularity,

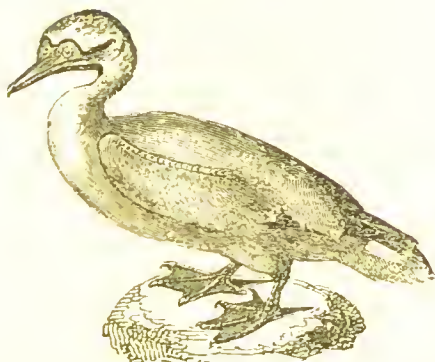
as they always proceed either in a line abreast, or in two lines, forming an angle in the middle.

The common TAME GOOSE is nothing more than the Wild Goose in a state of domestication. It is sometimes found white, though much more frequently verging to gray; and it is a dispute among men of taste, which should have the preference.

These birds, in rural economy, are an object of attention and profit, and are now where kept in such vast quantities as in the fens of Lincolnshire; several persons there having as many as a thousand breeders. They are bred for the sake of their quills and feathers; for which they are stripped while alive, once in the year for their quills, and no less than five times for the feathers: the first plucking commences about Lady Day, for both; and the other four between Lady Day and Michaelmas. It is said that in general the birds do not suffer much from this operation: except cold weather sets in, which then kills great numbers of them. The old Geese submit quietly to be plucked, but the young ones are very noisy and unruly. The possessors, except in this cruel practice, treat their birds with kindness; lodging them very often even in the same room with themselves.

These Geese breed in general only once a year, but if well kept they sometimes hatch twice in a season. During their sitting, each bird has a space allotted to it, in rows of wicker pens placed one above another; and it is said that the gozzard, or gooseherd, who has the care of them, drives the whole flock to water twice a day, and bringing them back to their habitation, places every bird in its own nest. The numbers of Geese which are sent to the metropolis for sale are enormous, two or three thousand being frequently seen in a drove, and some droves having even contained more than nine thousand.

## THE GANNET.



THE Gannet, or Solan Goose, belongs to the Pelican tribe, and is somewhat more than three feet in length, and weighs about seven pounds. The bill is six inches long, straight almost to the point, where it is a little bent; its edges are irregularly jagged, for the better securing of its prey; and about an inch from the base of the upper mandible is a sharp process, pointing forward. The general colour of the plumage is dirty white, with a cinereous tinge. Surrounding each eye there is a naked skin of fine blue: from the corner of the mouth a narrow slip of naked black skin extends to the hind part of the head; and beneath the chin is a pouch, like that of the pelican, capable of containing five or six herrings. The neck is long; the body flat, and very full of feathers. On the crown of the head, and the back part of the neck, is a small buff-coloured space. The quill feathers and some other parts of the wings are black; as are also the legs, except a fine peagreen stripe in their front. The tail

is wedge-shaped, and consists of twelve sharp pointed feathers.

These birds, which subsist entirely upon fish, chiefly resort to those uninhabited islands where their food is found in plenty, and men seldom come to disturb them. The islands to the north of Scotland, the Skelig Islands off the coast of Kerry, in Ireland, and those that lie in the north sea of Norway, abound with them. Not fewer than a hundred thousand are believed to frequent the small island of St. Kilda, of which one-fifth are annually killed by the inhabitants for food. But it is on the Bass Island, in the Firth of Edinburgh, where they are seen in the greatest abundance.

The Gannet is a bird of passage. In winter it seeks the more southern coasts of Cornwall, hovering over the shoals of herrings and pilchards that then come down from the northern sea: its first appearance in the northern islands is at the beginning of spring; and it continues to breed till the end of summer. But, in general, its motions are determined by the migrations of the immense shoals of herrings that come pouring down at that season through the British Channel, and supply all Europe as well as this bird, with their spoil. The Gannet assiduously attends the shoals in their passage, keeps with them in their whole circuit round our island, and shares with our fishermen this exhaustless banquet. At times it migrates as far south as the Tagus in quest of food. As it is strong of wing, it never comes near the land, but is constant to its prey. Wherever this bird is seen, it is sure to announce to the fishermen the arrival of the finny tribe; they then prepare their nets, and take the herrings by millions at a draught; while the informer comes, though an unbidden guest, and snatches its prey from the fishermen even in his boat. While the fishing season continues, the Gannets are busily employed; but when the pilchards disappear from our coasts, they take their leave, to keep them company.

These birds breed but once a year, on the highest and steepest rocks near the sea, and lay only one egg, but if that be taken away, they lay another; and if that be also taken away, then a third; but never more for that season. Their eggs are white, and rather less than those of the common goose; and their nest large, composed of such substances as are found floating on the surface of the sea. The young birds during the first year, differ greatly in colour from the old ones; being of a dusky hue, speckled with numerous triangular white spots.

These birds, when they pass from place to place, unite in small flocks of from five to fifteen; and except in very fine weather, fly low, near the shore, but never pass over it; doubling the capes and projecting parts, and keeping nearly at an equal distance from the land. During their fishing they rise high into the air, and sail aloft over the shoals of herrings or pilchards, much in the manner of kites. When they observe the shoal crowded thick together, they close their wings to their sides and precipitate themselves headforemost into the water, dropping almost like a stone. Their eye in this act is so correct, that they never fail to rise with a fish in their mouth. If in flying away with one, they see another they like better, they immediately drop the first to seize it. The force with which it descends on its prey may be imagined from a circumstance which occurred, some years ago, at Penzance, in Cornwall. As some pilchards were lying on a fir plank, a Gannet darted down on them with such impetuosity as to strike its bill quite through the board, which was an inch and a quarter thick, and, as may be supposed, to kill itself on the spot. The St. Kildans sometimes take them by fastening a herring to a plank, and setting it afloat. The bird swoops down, and breaks its neck by its violence.

## THE EIDER DUCK.



THE Eider Duck is about twice the size of the common English Duck. It has a black cylindrical bill, and the feathers of the forehead and cheeks advance far into the base. In the male, the feathers of part of the head, the lower part of the breast, the belly, and the tail, are black, as are also the quill feathers of the wings; and nearly all the rest of the body is white. The legs are green. The female is of a reddish brown, variously marked with black and dusky streaks. It is principally found in the western isles of Scotland, on the coasts of Norway, Iceland, and Greenland, and in many parts of North America, particularly in the Esquimaux Islands.

The female lays from three to five eggs (sometimes so many as eight), which are large, smooth, glossy, and of a pale olive colour. They generally lay among stones, or plants, near the sea, but in a soft bed of down, which they pluck from their own breasts. Sometimes two females will lay their eggs in the same nest, in which case they always agree remarkably well. As long as the female is sitting, the male con-

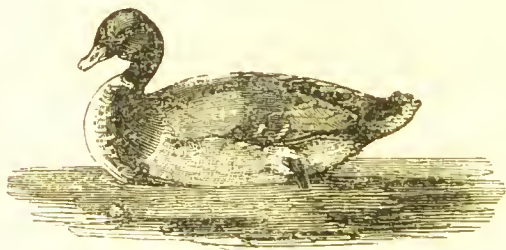
tinues to watch near the shore ; but as soon as the young are hatched, he leaves them. The mother, however, remains with them a considerable time afterwards. It is curious to observe her manner of leading them out of the nest, almost as soon as they creep from the eggs. Going before them to the shore, they trip after her : and, when she comes to the waterside, she takes them on her back, and swims a few yards with them, when she dives ; and the young ones are left floating on the surface, obliged to take care of themselves. They are seldom seen afterwards on land.

In Iceland the Eider Ducks generally build their nests on small islands, not far from the shore ; and sometimes even near the dwellings of the natives, who treat them with so much attention and kindness as to render them nearly tame. From these birds is produced the soft down so well known by the name of eider, or edder down, which is so light and expansive that a couple of handsfull will fill a down quilt, which, in cold countries, is used instead of a quilt or blanket. In the breeding season the birds pluck it from their breasts to line their nests, and make a soft bed for the young ones. When the natives come to the nest, they carefully remove the female and take away the superfluons down and eggs ; after this, they replace the female : she then begins to lay afresh, and covers her eggs with new down, which she also plucks from her body ; when this is scarce, or she has no more left, the male comes to her assistance, and covers the eggs with his down, which is white, and easily distinguished from that of the female. When the young ones leave the nest, which is about an hour after they are hatched, it is once more plundered. The most eggs and the best down are got during the first three weeks of their laying ; and it has generally been observed, that they lay the greatest number of eggs in rainy weather. One female, during the time of laying, generally gives half a pound of down ; which,

however, is reduced one half after it is cleaned. When pure it is sold in Lapland for two rixdollars a pound. The Iceland Company at Copenhagen generally export from Iceland about one thousand five hundred, or two thousand pounds weight of this down, besides what is privately purchased by foreigners.

The Greenlanders kill these birds with darts; pursuing them in their little boats, watching their course by the air bubbles when they dive, and always striking them when they rise to the surface wearied. The flesh is valued as food, and their skins are made into warm and comfortable under-garments.

### THE DUCK.



THE Wild Duck, which is the parent stock of the Tame, frequents marshy places in several parts of the kingdom, but especially in Lincolnshire, where they are annually taken in immense numbers. Nearly thirty-two thousand have been taken in ten Duck decoys, in the short period of one season. Yet, though so many are taken, it is an artful bird, and will choose for its nest such a spot as is least likely to be suspected. It will even lay its eggs in high trees, far from the water, and carry the young to the water in its bill.

The COMMON DUCK, of which there are about ten different sorts, is so universally known as to require no description. It is the most easily reared of all our domestic animals. The very instinct of the young ones directs them to their favourite element; and though they are conducted by a hen, they despise the admonition of their leader. The feet of the Tame Duck are black.

It is usual to lay Duck eggs under a hen, because she hatches them better than the original parent would have done. The Duck seems to be a heedless inattentive mother; she frequently leaves her eggs till they spoil, and even seems to forget that she is entrusted with the charge: she is equally regardless of them when excluded; she leads them to the pond, and thinks she has sufficiently provided for her offspring when she has shown them the water. Whatever advantages may be procured by coming near the house, or attending in the yard, she declines them all; and often lets the vermin which haunt the waters destroy them, rather than take shelter nearer home. The hen is a nurse of a very opposite character; she broods with the utmost assiduity, and generally brings forth a young one from every egg committed to her charge; she does not lead them to the water indeed, but she carefully guards them when there, by standing at the brink. Should the rat or the weazel attempt to seize them, the hen instantly gives them protection; she leads them to the house when tired with paddling, and rears up the supposititious brood, without ever suspecting that they belong to another.

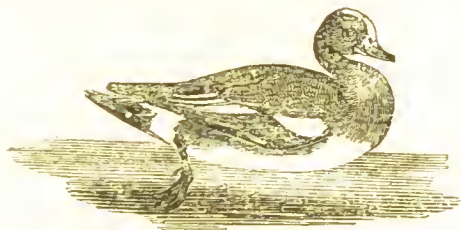
In China artificial heat is employed to hatch the major part of the Ducks. The eggs are laid in boxes of sand, and placed on a brick hearth, which is heated to a proper temperature. After they are hatched, they are fed for a fortnight, at the expiration of which period they can provide for themselves.

## THE CRESTED GREBE.



THE Crested Grebe is about the size of a duck. Its bill, that part especially towards the head, is of a reddish colour, and is somewhat more than two inches in length. On the top of the head and neck is a beautiful crest of feathers, those on the neck appearing like a collar or ruff, and seeming a good deal bigger than they really are; those on the top of the head are black, those on the sides of the neck are of a reddish or cinereous colour; the back and wings are of a darkish brown, pretty much inclining to black, except some of the exterior edges of the wing feathers, which are white. The breast and belly are of a light ash colour; it has no tail; the legs and toes are broad and flat. It has an unpleasant cry, and will occasionally, when angered or pleased, raise or fall the feathers of his crest.

## THE WIDGEON.

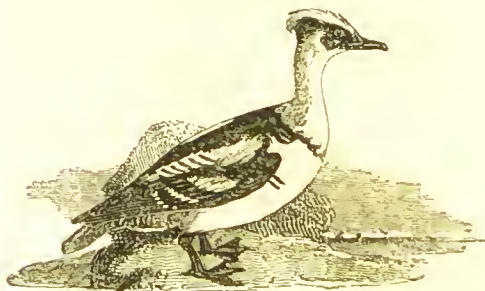


THIS bird weighs about twenty-two ounces ; it has a black nail at the end of the upper mandible of the bill, the other part of which is of a lead colour ; the structure of the head and mouth very much resembles the common wild duck, only the head does not seem to be quite so large, in proportion to the body, which also appears of a finer shape, and the wings longer. The crown of the head towards the base of the bill is of a pale pink colour, inclining to a reddish white ; the other parts of the head and neck are red ; the sides of the body and the upper part of the breast are tinged with a very fair, glossy, and beautiful claret colour, with a few small transverse lines of black. The feathers on the back are brown, the edges more pale or ash coloured ; the scapular feathers, and those under the fore part of the wings, are finely variegated with small transverse black and white lines, beautifully dispersed like waves ; the quill feathers are some of them brown, with white tips, others have their outward webs of a blackish purple ; other parts, especially those beyond the covert feathers, of a lovely fine blue ; some of the exterior feathers have their outward webs inclining to black, with a fine purple gloss upon the borders, of which there are a number

of small light coloured spots; the rest of the wing feathers are of a beautiful party-coloured brown and white. The upper part of the tail is ash coloured; the under part behind the vent, black. The legs and feet are of a dark lead colour, and the claws black. The young of both sexes are gray, and this hue they retain till February, when the plumage of the male begins to assume its variegated tints. He is said to retain his bright colours till the end of July, and then to become dark and gray, so as scarcely to be distinguished from the female.

Widgeons are common in Cambridgeshire, the Isle of Ely, &c. where the male is called the Widgeon, and the female the Whewer. They feed upon wild periwinkles, grass, weeds, &c. which grow at the bottom of rivers and lakes. Their flesh has a very delicious taste, not inferior to teal, or wild ducks.

### THE SEAMEW.

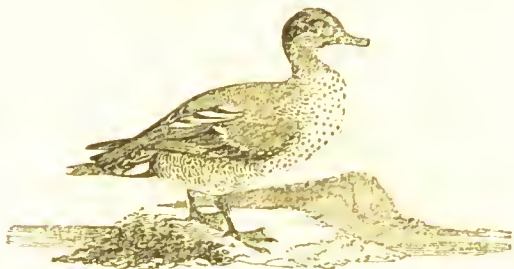


THIS bird measures from the point of the bill to the end of the tail near eighteen inches, and from the extremity of each wing when extended, upwards of two feet, and weighs about a pound and a half. It has a

fine crest upon the head, which falls down towards the back part of it, under which, on each side of the head, is a black spot: the rest of the head and neck, and the under parts of the body, are white; the back and the wings are a pleasing mixture of black and white. The tail is about three inches long, of a kind of dusky ash colour, the feathers on each side shortening gradually. The bill is of a lead colour, at the extremity of which is a dirty coloured spot of white; it is somewhat less than that of the generality of the duck kind, a little hooked, with large open nostrils; the legs are pretty much of the same colour as the bill, and the eyes are darkish coloured.

The female of this bird has no crest; the sides of the head are red; the throat white, the wings of a dusky ash colour; in other respects it agrees with the male. They feed on fish, but are very rarely seen in England, except in very hard seasons, and then not more than three or four of them together.

### THE TEAL.



THIS is the smallest bird of the duck kind, it is common in England in the winter months; and some imagine that it breeds here as well as it does in France.

It does not usually weigh more than twelve ounces; and it measures about sixteen inches from the point of the bill to the tip of the tail, and from the extremity of each wing, when extended, nearly two feet. The bill is of a dark brown colour, the head is considerably lighter, inclining to a bay, with a large white stripe over each eye, bending downwards, towards the back part of the head: the back and sides under the wings are curiously varied with lines of white and black. The breast is of a dirty coloured yellow, interspersed with dusky transverse lines; the belly more bright, with yellowish brown spots; the quill feathers of the wings are of a dusky brown, with white edges; the covert feathers appear of a fine shining green, with their tips white; the scapular feathers are more inclining to an ash colour; the legs and feet are brown, the claws black. These birds feed on cresses, chervil, and other weeds, and also on seeds and some kinds of water insects. The flesh is a great delicacy, and has a less fishy taste than any other of the wild duck tribe.

The female constructs her nest of reeds interwoven with grass, and is said to make it among rushes, that it may rise or fall with the varying height of the water.

The Chinese Teal of Edwards, and the summer duck of Catesby, are elegant species; the former is a native of China, sometimes brought alive into England, but too tender to be reared in this country. It is of a dusky brown on the upper parts, and chestnut coloured on the neck and breast; the scapulars are black, and at the bend of each wing are three transverse streaks of black, and two of white alternately: On the head is a fine expanded crest, of which the base is white, and the upper part a beautiful glossy green. The Summer Duck inhabits Mexico and some of the West India Islands; and is to be seen here at times in the menageries of the curious.

## THE CRANE.



CRANES belong to the Heron tribe, and the varieties are very numerous, there being in the whole nearly a hundred of them. They are chiefly found in temperate and hot climates, and some of them are migratory. Birds of this species may, for the most part, be distinguished by the length of their legs and bills, the latter of which are possessed of great sensibility near the point, and even furnished with nerves, for the better feeling their food at the bottom of marshes, where it cannot be seen. None of them have been taken under the protection of man; but they lead a life of precarious liberty, in fens and marshes, at the edges of lakes, and along the seashore. These cannot, strictly speaking, be called either land birds or waterfowl; as they derive all their sustenance from watery places,

and yet are unqualified to seek it in those depths where it is found in greatest plenty.

The Crane measures upwards of five feet in length and three feet in height, with a neck proportioned to the length of its legs. The top of the head is covered with black bristles, and the back of it, which is bald and of a red colour, distinguishes it from the stork, to which it would otherwise bear a very near resemblance. The bill is more than four inches long, and somewhat cylindrical. The plumage is generally ash coloured, and from the pinion of each wing grow two large tufts of feathers finely curled at the ends; which the bird can erect or depress at pleasure. Some parts of the wings are blackish.

The arctic regions seem to be the favourite spring abode of these birds: for although they are found in most parts of Europe, except Great Britain, they may be considered as visitants rather than inhabitants; as they migrate from one part to another, and seem to follow the seasons. In winter they inhabit the warmer regions of Arabia and Egypt. Though now strangers to England, they are said to have formerly visited the marshes of Lincolnshire and Cambridgeshire in vast flocks. They are seen in France, in the spring and autumn, but merely as passengers. As they rise from the ground but heavily, they are extremely shy, and seldom let the fowler approach them. They, however, fly very high, and form themselves into a triangle the better to overcome the resistance of the air. Their migratory voyages are generally performed under the cover of darkness, and their depredations are usually made at night, when they will enter a field of corn, and trample it down, as if it had been crossed over by a regiment of soldiers. On other occasions, not finding that grain which is most suitable to their appetites, they choose some extensive solitary marsh, where they range themselves all day, as if they were

in deliberation ; and wade for insects and other food, which they can procure with less difficulty and danger. The female lays two eggs, about the size of those of a goose, but of a bluish colour. The young ones may be easily domesticated.

### THE GIGANTIC CRANE.

THIS bird is much larger than the former ; measuring from tip to tip of the wings nearly fifteen feet. The bill is of a vast size, nearly triangular, and sixteen inches round at the base. The head and neck are naked, except a few straggling curled hairs. The feathers of the back and wings are of a bluish ash colour, and very stout ; those of the breast are long. The craw hangs down the fore part of the neck like a pouch. The belly is covered with a dirty white down ; and the upper part of the back and shoulders are surrounded with the same. The legs and half the thighs are naked ; and the naked parts are full three feet in length.

This bird is an inhabitant of Bengal and Calcutta, and is sometimes found on the coast of Guinea. It arrives in the internal parts of Bengal before the period of the rains, and retires as soon as the dry season commences. It has a filthy and disgusting aspect, yet it is one of the most useful birds of those countries, in freeing them of snakes and noxious reptiles and insects. It seems to finish the work begun by the jackall and vulture : they clearing away the flesh of animals, and these birds removing the bones by swallowing them entire. They sometimes feed on fish ; and one of them will generally devour as much as would serve four men. In the craw of a Crane of this species has been found a land tortoise, ten inches long, and in its stomach a large black cat.

Gigantic Cranes are found in companies ; and when

seen at a distance, near the mouths of rivers, coming towards an observer (which they do with their wings extended), it is said that they may easily be mistaken for canoes on the surface of a smooth sea: and when on the sandbanks, for men and women picking up shell fish on the beach. The Indians believe them to be invulnerable, and animated by the souls of the deceased Bramins. In Africa they are equally venerated. They are not difficult to be tamed, and will become very familiar.

### THE BALEARIC CRANE.



THE native country of this bird, as its name expresses, is the Balearic Islands, in the Mediterranean. It is, however, now chiefly found in the Cape Verd Islands. In the form of its body it bears a resemblance to the Common Crane, but is distinguished from it by a thick round crest of grayish bristles, spreading every way,

and standing out like rays in different directions. These rays are all topped with a kind of black tassels, which give them a beautiful appearance. From this peculiarity it takes its other name of the Crowned Heron. The colour of the feathers is a dark greenish gray; the sides of the head and cheeks are bare, whitish, and edged with red; while underneath the throat hangs a bag or wattle, like that of a cock, but not divided into two. In running, which it does very swiftly, it stretches out its wings, but its usual movements are slow.

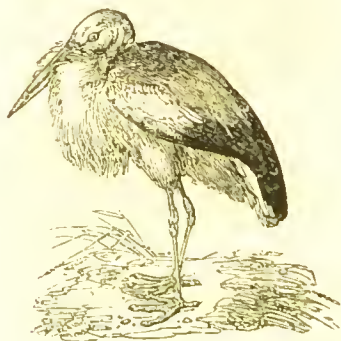
### THE ADJUTANT.



THIS bird is of the Heron tribe, and, according to the Linnæan system, belongs to the order of Waders. It has been brought from Botany Bay within these few years, and two of them were exhibited at the menagerie in Exeter Change. In its appearance there is something singular. Under the chin is a kind of purse

or bag, which seems adapted to receive the water that they swallow with their food. This connects it, in some degree, with the pelican. There is neither hair, feather, nor down, on the head, which looks as if it were made of wood, and this oddity is heightened by the eye seeming to be set in it, as if without lids or any cartilaginous appendages. The beak is equally anomalous ; it is composed of two long sticks, apparently as of wood, with which the bird makes a loud chattering noise, in order to clean them. The covert of the wings and back are black, with a bluish tint, the under part of the body is whitish ; the legs are long, unfeathered, and of a grayish hue ; the thighs, which seem to be as slender as the leg, are the same ; and the articulation between the tibia and the femur is very obvious, and larger than in any other bird of the kind. The neck also is devoid of feathers, like that of the ostrich, and is of a flesh colour.

### THE STORK.



OF this bird it is not necessary to mention more than the most remarkable species, which is the White

Stork, the length of which is about three feet. The bill is nearly eight inches long, and of a fine red colour. The plumage is wholly white; except the orbits of the eyes, which are bare and blackish: some of the feathers on the side of the back and on the wings are black. The skin, the legs, and the bare parts of the thighs are red.

The White Stork is semidomestic; haunting towns and cities, and in many places stalking unconcernedly about the streets, in search of offal and other food. They remove the noxious filth, and clear the fields of serpents and reptiles. On this account they are protected in Holland, held in high veneration by the Mahometans, and so greatly were they respected in times of old by the Thessalonians, that to kill one of these birds was a crime expiable only by death. The ancients, indeed, ascribed to it the virtues of temperance, conjugal fidelity, and filial and paternal piety.

The disposition of this bird is mild, neither shy nor savage: it is easily tamed, and may be trained to reside in gardens, which it will clear of insects and reptiles. It has a grave air, and a mournful visage. yet, when roused by example, it shows a certain degree of gaiety; for it joins in the frolics of children, by imitating them. Dr. Hermann tells us that he saw a tame one in a garden, where the children were playing at hide and seek, and that it ran its turn when touched, and so well distinguished the child whose turn it was to pursue the rest, as to be perfectly on its guard. Nor do they lightly feel or inadequately revenge an injury. A wild Stork, having been beaten by a tame one, has been known, after an interval of four months, to come back with three other Storks, and kill the former victor.

Storks are birds of passage, and observe great exactness in the time of their autumnal departure from

Europe to more favourite climates. They are seldom seen farther north than Sweden: and though they have scarcely ever been met with in England, they are so common in Holland as to build every where on the tops of the houses, where the inhabitants provide boxes for them to make their nests in; and are careful that the birds suffer no injury, always resenting this as an offence committed against themselves. Storks are also common at Aleppo, and in plenty at Seville, in Spain. At Bagdad, hundreds are said to be seen about the houses, walls, and trees; and at Persepolis, or Chilmanar, in Persia, the remains of the pillars serve them to build on, every pillar having a nest on it.

This bird bestows much time and care on the education of its young, and does not leave them till they have strength sufficient for defence and support. When they begin to flutter out of the nest, the mother bears them on her wings; she protects them from danger, and will sometimes perish rather than forsake them.

In autumn they retire into Egypt, and the marshes of Barbary, where they enjoy a second summer, and bring up a second brood. Their migration is performed in immense companies. Dr. Shaw saw passing over Mount Carmel three flocks of them, each of which was half a mile in width, and they were three hours in going by. Bellonius informs us that Storks visit Egypt in such abundance that the fields and meadows are white with them, and that the natives are pleased with their arrival, as the birds deliver them from innumerable swarms of frogs, and also devour serpents. Between Belba and Gaza, in Palestine, they perform a similar service, by destroying innumerable rats and mice.

## THE HERON.



THIS bird is remarkably light in proportion to its bulk ; seldom weighing more than three pounds and a half, although it is three feet three inches in length, and expands a breadth of wing not less than five feet. It is always lean, and its skin is said to be scarcely thicker than the membrane which is used by gold-beaters. Its bill is five inches long, having serratures at the point, which stand backward, and act like the barbs of a fishhook after the prey is struck ; and its claws are long, sharp, and formidable : but though it appears thus completely armed for war, it is indolent and cowardly, and even flies at the approach of a sparrowhawk. In fresh water, however, it is a perfect tyrant, and there is scarcely a fish, however large, that it will not strike at and wound, though unable to carry it away : but it subsists chiefly on the smaller fry, of which it devours immense quantities. Willoughby saw a Heron that had seventeen carp in its stomach ; and a single bird will destroy nine thousand in the course of a year.

These birds live chiefly among pools and marshes, and commit their depredations in solitude and silence :

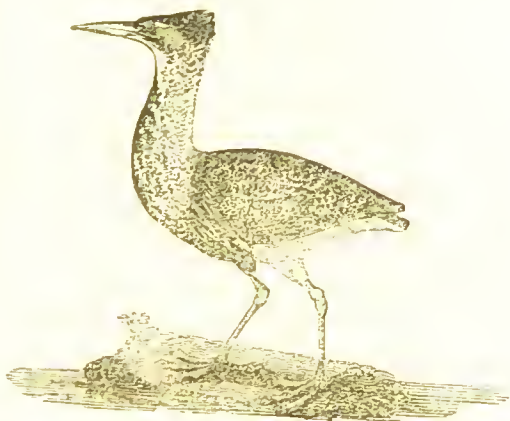
yet in making their nests they are seen, like rooks, building in company with flocks of their own kind. Their nests are made of sticks, and lined with wool; and the female lays four large eggs of a pale green colour. When the young are excluded, as they are numerous, voracious, and importunate, the parents are for ever on the wing, to satisfy their cravings; and the quantity of fish they take upon this occasion is truly surprising.

This bird, though he usually takes his prey by wading as far as he can into the water, frequently also catches it while on the wing: but this is only in shallow waters, where he is able to dart with more certainty than in the deeps; for in this case, though the fish does, at the first sight of its enemy, descend, yet the Heron, with his long bill and legs, instantly pins it to the bottom, and thus seizes it securely.

When falconry was in fashion, the chase of the Heron was a favourite amusement. Somerville has described with great spirit the contest between the hawks and the Heron, and the death of the latter.

—————Now like a wearied stag,  
That stands at bay, the Hern provokes their rage;  
Close by his languid wing, in downy plumes  
Covers his fatal beak, and cautious hides  
The well dissembled fraud. The falcon darts  
Like lightning from above, and in her breast  
Receives the latent death; down plum she falls  
Bounding from earth, and with her trickling gore  
Defiles her gaudy plumage. See, alas!  
The falconer in despair, his favourite bird  
Dead at his feet; as of his dearest friend  
He weeps her fate; he meditates revenge,  
He storms, he foams, he gives a loose to rage:  
Nor wants he long the means; the Hern fatigued,  
Borne down by numbers, yields, and prone on earth  
He drops: his cruel foes wheeling around  
Insult at will.

## THE BITTERN.



THE Bittern is less in size than the heron, and has a weaker bill, not more than four inches in width. The mouth, however, opens with such an expansion that the eyes appear to be fixed in the bill. The feathers form a sort of pendent crest on the hind part of the head, the crown of which is black. The plumage of the bird is of a pale dull yellow, variously marked with black; and some parts about the wings are of a bright rust colour barred with black. On the breast the feathers are long and loose, and the tail is very short. The legs are of a palish green hue: the claws are long and slender; and the middle one is serrated, in order to retain a better hold of the prey.

The Bittern is a native of various parts of Europe, and in England inhabits the fen countries. In autumn it changes its place of abode, and always commences

its journey at sunset. It is naturally a retired inoffensive bird, leading a solitary life among the reeds and rushes of extensive marshes, where it usually sits with its head erect, so as to see over them, without being seen by the sportsman. In the summer it feeds on fish and frogs; and in autumn it resorts to the woods, in search of mice. The males, during the months of February and March, make a kind of deep lowing noise in the mornings and evenings, which is scarcely less terrific than the bellowing of a bull. This is supposed to be the call to the female, and was formerly imagined to be produced by the bird while its beak was plunged into the mud. It is now believed to be caused by a loose membrane, situated at the entrance of the throat, and which is capable of being widely expanded. The Bittern flies chiefly in the dusk of the evening, and rises by a spiral ascent till it is out of sight, uttering at the same time a strange cry, quite different from its booming.

In April, the female composes a simple nest of sedges, the leaves of water plants, and dry rushes; and generally lays four or five eggs, of an asb-green colour, which she hatches in twenty-five days. The Bitterns defend their young with such courage, that even the hawk will seldom venture to attack the nest.

When wounded by the sportsman, this bird often makes a severe resistance. It does not retire; but waits the onset, and gives such vigorous pushes with its bill as to wound the leg through the boot. Sometimes it turns on its back, like the rapacious birds, and fights with both its bill and claws. When surprised by a dog, it is said always to throw itself into this posture, and defend itself so vigorously, as to compel its assailant to retire. The eyes of its antagonist are the object at which it chiefly strikes. It does not fly from birds of prey, but ereets its sharp beak, and receives the shock on the point, by which

it compels its enemy to retreat, and sometimes with a fatal wound. Its flesh has much the flavour of a hare, and is held in esteem at modern tables, as it was in those of ancient times.

## THE FLAMINGO.

FLAMINGOES combine the characteristics of the Linnæan orders of Swimmers and Waders. Their legs and necks are long; their bills are thick, large, and bending in the middle; the high part of the upper mandible is keel-shaped, and its edges are sharply indented, while the lower mandible is compressed, and its edges are transversely furrowed. The nostrils are pervious, and covered above with a thick plate; and the tongue, the upper part of which is aculeated, and the middle muscular, is cartilaginous, and pointed at the end. The feet are webbed, and the back toes are very small.

The RED FLAMINGO has a body which is about the size of that of a goose, but so long are its legs and neck that, when it stands erect, it exceeds six feet in height. Its colour is a beautiful scarlet. They are generally found in great flocks, and when seen at a distance, ranged along the sides of rivers, seeking for food, they appear like a regiment of soldiers. Water insects and small fish are the articles on which they subsist. Their mode of catching these is to plunge the bill and part of the head into the water, trampling up the mud at the same time to raise up their prey. While they are thus employed, one of their number is placed as a sentinel, to give notice of danger, which he does by giving a loud scream, something like the sound of a trumpet. The whole flock then instantly take flight, uttering shrill cries.

The female builds her nest in extensive marshes, where there is no danger of surprise; and the fabric

is not less curious than the bird that ereets it. It is raised about eighteen inches above the surface of the pool, and is formed of mud, seraped together, and hardened in the sun; its shape resembles that of a common chimneypot; the upper part is hollowed out to the shape of the bird; and in that cavity she lays her eggs which never exceed two in number. The young ones are for a long time incapable of flying, but they are said to run with amazing celerity. They may be easily domesticated; but generally pine away for want of their natural supplies.

Flamingoes chiefly inhabit America and Africa, but are sometimes met with on the Mediterranean coast of Spain, Italy, and France. They were in high request with the Romans, who often used them in their sumptuous entertainments and grand sacrifices. The tongue was considered by them as the most delicate of all viands.

### THE CASHEW CURASSOW.

THIS bird is nearly of the size of a hen turkey, and takes its name from the knob over its bill, which, in shape, greatly resembles the cashew nut of America. It is a native of the torrid zone, and is found in Jamaica, and other islands of America. It feeds, like the turkey, on grain, insects, and the like.

The knob over the bill is of a fine blue colour, as is also the basis of the upper mandible of the bill; the remainder of the bill is red: the eyes have reddish brown irides. The whole bird is of a shining blackish colour, reflecting purple glosses; except the lower part of the belly, the covert feathers, under the tail, and the tips of the tail feathers, which are white. The legs and feet are covered with a scaly skin, of a bright flesh colour.

There are several species of this bird.

## THE SPOONBILL.



OF the Spoonbill, which has sometimes erroneously been called the Shoveller (the real Shoveller being a bird of the duck tribe), there are three species. The first of these is the ROSEATE SPOONBILL, which has beautiful red plumage, with a collar of black at the lower part of the neck. The third, which inhabits Guiana and Surinam, is called the DWARF SPOONBILL, and is about the size of a sparrow. Its body is brown above, and white beneath; the quills have white shafts; and the tail is rounded, short, and of a brownish white colour. The most common species, however, is the second, which bears the name of the WHITE SPOONBILL, from its plumage, except in some rare exceptions, being entirely white. This bird is about the size of a heron, but somewhat shorter in the neck and legs. The bill is more than half a foot long, and has the shape of a spoon.

“This bird,” says Mr. Latham, “is found in various parts of the old continent, and from the Fero Islands, near Iceland, to the Cape of Good Hope. It frequents

the neighbourhood of the sea, and has been met with on the coasts of France; at Sevenhuys, near Leyden, it was once in great plenty, annually breeding in a wood there. The nest is placed on high trees, near the sea side. The female lays three or four white eggs, powdered with a few pale red spots, and of the size of those of a hen. They are very noisy during breeding time, like our rooks; are seldom found high up the rivers, chiefly frequenting the mouths of them. Their food is fish, which they often take from other birds, in the manner of the bald eagle; also muscels and other shell fish, being found in greatest numbers where these are plenty; and they will also destroy frogs and snakes, and even grass and weeds, which grow in the water, as well as the roots of reeds. They are migratory, retiring to the warmer parts as the winter approaches, and are rarely seen in England." In consequence of their destroying frogs, toads, and serpents, they are highly prized at the Cape of Good Hope.

On the hind part of the head of this bird is a beautiful white crest, reclining backwards; while the legs and thighs are jet black: but the wisdom of Providence is conspicuous in the conformation of the bill, which seems entirely adapted to the habits and manner of feeding of these birds; the frog and the lizard, which constitute the principal food of the Spoonbill, often escape the thin and narrow beak of the heron and others, but here the mandibles are so large at the end, that the prey cannot slip aside.

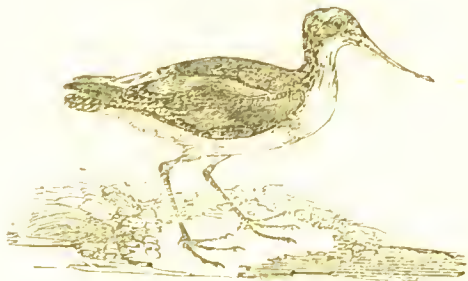
### THE AVOSETTA.

THE Avosetta is about the size of a pigeon, is variegated with black and white, and has extremely long legs; but the most extraordinary part of its figure is the bill, which turns up like a hook, in an opposite

direction to that of the hawk or the parrot; this is of a black colour, flat, sharp, and flexible at the end. The feet are webbed, and furnished with three toes forwards, and a short one behind.

The Avosetta is found in various parts of the Continent. In England they commonly breed in the fens of Lincolnshire, and on Romney Marsh, in Kent. They visit also the Severn, and sometimes the pools of Shropshire. In winter they assemble in flocks of six or seven about the mouths of large muddy rivers, in search of worms and insects, which they scoop out of the mud, with their recurved bills. Their feet seem calculated for swimming, but as they are never observed to take the water, it is probable that they are furnished with a web merely to prevent their sinking in the mud. The female lays two eggs, about the size of a pigeon's, of a white colour tinged with green, and marked with black spots.

### THE GODWIT.

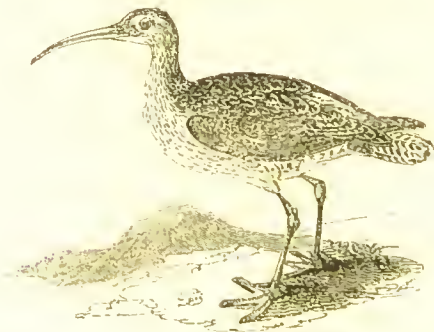


THE Godwit is about sixteen inches in length; the bill is nearly as long as that of the woodcock, of a palish red towards the base, black at the point, and turning a little upward; the upper mandible something

longer than the lower, the tongue is sharp, the ears open, and large. The feathers upon the head are a light brown or reddish colour, with their middle parts black, but about the eyes of a more pale or yellowish tincture; the neck and breast are pretty much of the same colour with the head, only interspersed with transversed black lines, edged with a pale yellow. The tail feathers are alternately crossed with black and white lines. The legs are of a dusky greenish colour, sometimes black, and the claws black.

They feed by the seaside upon sandy shores, where they pick up the worms which show themselves as soon as the tide recedes. The throat and neck of the hen are gray, and the rump is white, speckled or powdered with blackish spots. In some places they are called the Stone Plover. They are a very timid bird, and will hurry to shelter on the approach of tempestuous weather.

### THE CURLEW.



THE birds of this species vary much in size, some weighing not more than twenty-two ounces, while others weigh thirty-seven. They are found in Eng-

land, France, Italy, and Germany, and as far north as the Gulf of Bothnia, and they pass the Island of Malta twice yearly, in migrating across the Mediterranean. They fly in considerable flocks, and are well known upon the seacoasts in most parts; where, and in the marshes they frequent in winter, they feed on worms, frogs, and all kinds of marine insects. In summer they retire into mountainous and unfrequented parts, where they breed, and do not return again till the approach of winter. The Curlew has a long black bill, much curved, about eight fingers long, and beginning to bend a little downwards about three fingers from the head. The middle parts of the feathers on the head, neck, and back, are black; the borders ash coloured, with an intermixture of red; and those between the wings and back are of a beautiful glossy blue, shining like silk. The vent and belly are white. The feet are divided, but joined by a little membrane at the root. The female is somewhat larger than the male, which is commonly called the Jack Curlew, and the spots with which her body is covered almost all over, are more inclining to a red.

### THE SNIPE.



SNIPES are migratory birds, which are supposed to breed chiefly in the lower lands of Germany and

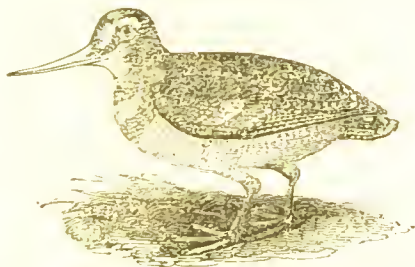
Switzerland. They visit us in autumn, and retire in the spring. Many, however, remain with us the whole year, and make their nests of dried grass and feathers, in the most inaccessible parts of marshes. One variety of this bird, of a smaller size, is called the JACK SNIPE. Their food consists of small worms, slugs, and the larva of insects. During the breeding season, while it plays over the moors, this bird makes a pleasing humming and piping sound. Their flesh is justly reckoned among feathered dainties.

From the point of the bill to the end of the tail, the Snipe measures about twelve inches, and from the point of each wing when extended, about fifteen or sixteen; the head is divided longways by a pale red line, parallel to which on each side is a black line, and over the eyes there runs another line pretty much of the same colour as that on the middle of the head. The feathers that spring from the shoulders reach almost as far as the end of the tail, the outward half from the shaft being of a pale red. The colours thus succeeding each other, make two lines down the back, the covert feathers of which are dusky with white transverse lines, and white tips on some of the large wing feathers, the lesser feathers being of a mixed colour of red, black, and gray, beautifully variegated with white and brown lines running across them. The bill is black at the tip, and near three inches long, the tongue is sharp, the eyes of a hazel colour. The legs are of a pale greenish colour, the toes pretty long, and the talons black.

About thirty years ago Snipes are said to have been so abundant in the fens of Cambridgeshire, that a single man, in one night, took as many of them with a lark net as were sufficient to fill a hamper.

The Jack Snipe has a more swift and direct flight than the common species. As it will not rise till it is almost trodden on, the French sportsmen give to it the appellation of *la sourde*, or *deaf*.

## THE WOODCOCK.

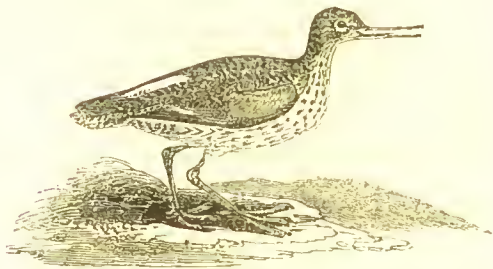


DURING the summer, the Woodcock inhabits and breeds in Norway, Sweden, Lapland, and other countries in the north; but on the commencement of the frost it begins to migrate southward. A few of these birds reach us in October, but the main body does not arrive till November or December; and they are often much exhausted by their journey. They have recently been more scarce in England, in consequence, it is supposed, of their eggs having become an article of luxury in Sweden. The greater part of them leave us at the close of February or the beginning of March, after having paired; but they are sometimes detained for a while longer by the wind being adverse.

The Woodcock is about as large as a pigeon, with a bill three inches long. The crown of the head and back of the neck are barred with black, and a black streak runs from the bill to the eyes. It flaps its wings with some noise when it rises, and its flight is pretty rapid, but neither high nor long; and its descent is so sudden that it seems to fall like a stone. It flies very straight in a wood of tall trees, but in a copse it is

often obliged to wind, and frequently drops behind bushes, to conceal itself from the eye of the fowler. It principally feeds on worms and insects, which it draws out of the mud with its long bill; and its flesh is universally admired. The female builds a rude nest on the ground, and generally lays four or five eggs. She is remarkably tame during incubation.

### THE REDSHANK.

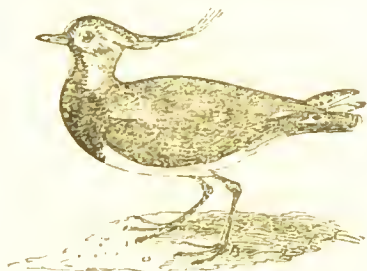


THIS bird weighs about five ounces and a half, and is twelve inches long. The bill is two inches, red at the base, and black towards the point. The head, neck, and scapulars are dusky ash colour, obscurely spotted with black: the back is white, spotted with black: the breast and belly are white, streaked with dusky lines. The tail is elegantly barred with black and white; and the legs, which are long, are of a bright orange colour, whence the bird derives its name. It breeds in fens and marshes, and the female lays four whitish eggs, tinged with olive, and marked, chiefly on the thicker end, with irregular black spots. When its nest is in danger it makes a noise somewhat similar to that of the lapwing. It is generally found single, never more than in pairs, and frequents most

of our shores. In the winter time it conceals itself in the gutters.

The GREENSHANK is a bird of the same kind as the former, but about two inches longer: its habits, disposition, modes of subsistence, and colour are nearly the same; with the exception of its legs, which are green, from which circumstance it is named. They both feed by the seashores, and sides of large rivers.

### THE LAPWING, OR PEEWIT.



THE Lapwing, or Bastard Plover, is about the size of a common pigeon, and is covered with very thick plumes, which are black at the roots, but of a different colour on the outward part. The feathers on the belly, thighs, and under the wings, are most of them white as snow: and the under part on the outside of the wings white, but black lower. The back is of a dark green, glossed with blue shades. The head and crest are black, and the latter, which is composed of unwebbed feathers, is almost four inches in length. It has a great liver, divided into two parts, and, as some authors affirm, no gall.

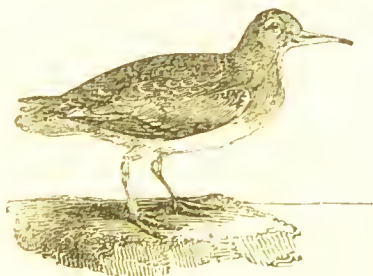
Lapwings are found in most parts of Europe, as far northward as Iceland. In the winter they are met

with in Persia and Egypt. Their chief food is worms; and sometimes they may be seen in flocks nearly covering the low marshy grounds in search of these, which they draw with great dexterity from their holes. When the bird meets with one of these little clusters of pellets, or rolls of earth, that are thrown out by the worm's perforations, it first gently removes the mould from the mouth of the hole, then strikes the ground at the side with its foot, and attentively waits the issue: alarmed by the shock, the reptile emerges from its retreat, and is instantly seized. In the evening they adopt another mode. They then run along the grass, and feel with their feet the worms which the dampness of the atmosphere has brought forth.

These birds make a great noise with their wings in flying, and are called Peewits, or Tewits, in the north of England from their particular cry. They remain here the whole year. The female lays two eggs on the dry ground, near some marsh; upon a little bed which she prepares of dry grass. These are olive coloured, and spotted with black. She sits about three weeks; and the young, who are covered with a thick down, are able to run within two or three days after they are hatched. The parent displays the fondest attachment to them, and employs innumerable interesting stratagems to avert approaching danger from them. "She does not wait the arrival of her enemies at the nest, but boldly pushes out to meet them. When she has approached as near as she dare venture, she rises from the ground with a loud screaming voice, as if just flushed from hatching, though probably she is not at the time within a hundred yards of her nest. She now flies with great clamour and apparent anxiety: whining and screaming round the invaders, striking at them with her wings, and sometimes fluttering as if she was wounded. To complete the deception, she becomes still more clamorous as she retires from the nest. If very near, she appears

altogether unconcerned; and her cries cease in proportion as her fears are augmented. When approached by dogs, she lies heavily, at a little distance before them, as if maimed; still vociferous, and still bold, but never offering to move towards the quarter where her young ones are stationed. The dogs pursue, in expectation every moment of seizing the parent, and by this means actually lose the offspring; for the cunning bird, having thus drawn them off to a proper distance, exerts her powers, and leaves her astonished pursuers to gaze at the rapidity of her flight." The Lapwing may be domesticated, and it then becomes uncommonly familiar and confiding.

### THE KNOT.



This bird measures not more than nine inches, and weighs only four ounces and a half. The head and neck are of a dusky ash colour, the back and scapulars brown, with a white bar on the wings. They frequent the coasts of Lincolnshire at the beginning of winter, remain there two or three months, and then depart in flocks. When fattened, they are preferred by some to the ruffs themselves. Camden says that they derive their name from King Canute, or Knute, with whom they were a favourite dish.

## THE RUFF.



THE Ruff is about a foot in length, with a bill of about an inch. The face is covered with yellow pimples; and the back part of the head and neck are furnished with long feathers, standing out somewhat like the ruff worn by our ancestors; a few of these feathers stand up over each eye, and appear not unlike ears. The colours of the Ruff's are in no two birds alike: in general they are brownish, and barred with black: though some have been seen that were altogether white. The lower parts of the belly and the tail coverts are white. The tail is tolerably long, having the four middle feathers barred with black; the others are pale brown. The legs are of a dull yellow, and the claws black. The female, which is called the Reeve, is smaller than the male, of a brown colour, and destitute of the ruff on the neck.

The Ruff's are much more numerous than the Reeves, and they have many severe contentions for their mates. The male chooses a stand on some dry bank, near a splash of water, round which he runs so often as to

make a bare circular path : the moment a female comes in sight, all the males within a certain distance commence a general battle ; placing their bills to the ground, spreading their ruff, and using the same action as a cock : and this opportunity is seized by the fowlers, who, in the confusion, catch them, by means of nets, in great number ; yet even in captivity, their animosity still continues. Even when kept in a room, each bird takes its stand, as in the open air, and if another intrudes on this chosen domain a conflict ensues. So pugnacious are they that a complete battle royal may be produced among them in a room, by compelling them to shift their stations. If the pan from which they feed be not large enough to allow of their not touching each other, they instantly commence a contest.

The Reeves lay four eggs in a tuft of grass, about the beginning of May ; and the young are hatched in about a month. Where these birds pass the winter is not certainly known. In England, they are most commonly found in Lincolnshire, the Isle of Ely, and the East Riding of York.

### THE SANDPIPER.

INDEPENDENT of the lapwing, the knot, and the ruff, there are more than forty other species of the Sandpiper tribe, eighteen of which are British. Of these we will mention four of the most remarkable. The name of Sandpiper is derived from the shrill pipe or whistle which is common to all the varieties of this tribe.

The COMMON SANDPIPER is a solitary bird, except in pairing time, and is never found near the sea, it frequenting only rivers, lakes, and other fresh waters. It has a brown head, streaked downward with black lines ; the neck of an obscure ash colour ; the back

and coverts of the wings brown, mixed with a glossy green, elegantly marked with transverse dusky lines; the breast and belly are of a pure white; the quill feathers and the middle feathers of the tail are brown; and the legs of a dull pale green.

The DUNLING SANDPIPER is found on our coasts, but may be reckoned among the rarest kinds. In size it is somewhat larger than a lark, and it is a singularly coloured bird. The head, the upper part of the neck, and the back are of a ferruginous hue, marked with large black spots; the lower part of the neck is white, barred with short dusky streaks; the belly is white, dotted with large black spots, or varied with a black crescent pointing towards the thighs; the tail is ash coloured; the coverts of the wings the same; the legs black; and the toes divided to their origin. The female lays four eggs of a dirty white colour, blotched with brown round the thicker end, and marked with a few small spots of that colour on the lesser end.

The third variety is the PURRE or STINT, which is seven inches and a half in length. The head and the hind part of the neck of this bird are of an ash colour, marked with dusky lines, and a white stroke divides the bill and eyes; the back is of a brownish ash colour; the breast and belly are white; the coverts of the wings and tail are of a dark brown, edged with light ash colour or white; the upper part of the quill feathers is dusky, and the lower white; the legs are of a dusky green, and the toes divided to their origin. The bill is an inch and a half long, black, and slender. During the winter these birds, in immense flocks, visit our coasts, whence they retire in the spring. While flying they perform their evolutions with great regularity; and, according as they turn their backs or their breasts towards us, they appear like a white or a dusky cloud.

The most curious species of this tribe is the TURN-

STONE, which is of the size of a thrush, and has a black bill, about an inch long, turned up a little at the end. The body of this bird is black, variously marked with white and rust colour on the upper parts; the breast and belly being white. The legs are short and orange coloured. It is found on various parts of the coast of England and Scotland, and in North America. The female makes a nest in the sand, in which it lays three or four olive coloured eggs, spotted with black; and at the time of hatching it is so courageous that it will attack dogs, and even men, on their approaching the nest. The Turnstone has its name from its custom of turning over stones, in search of insects and worms. Catesby saw one of them which, though it moved only the upper mandible of its bill, was able dexterously and quickly to turn over stones of three pounds weight.

### THE DOTTEREL.



THE length of this bird is about ten inches. It has a black bill; white cheeks and throat; pale dull orange breast; light brown back and wings; reddish white belly, thighs, and vent; an olive brown tail, tipped with white; and dark olive coloured legs. It is a

migratory bird, visiting Cambridgeshire, Lincolnshire, and Derbyshire in flocks, from April to June. The Dotterel is also said to breed among the mountains of Westmoreland and Cumberland. While in season, it is considered as excellent eating. It has the singular peculiarity of imitating all the motions made by the bird catcher who pursues it at night with a lighted torch, and thus gives him an opportunity of entangling it in his net.

### THE LONG-LEGGED PLOVER.



THIS singular bird, we might, perhaps, justly say most singular of birds, inhabits the south of Europe, Asia, Africa, and America, but very rarely visits England. Chance alone seems to drive it to this country. It has a slender, black bill, two inches and a half in length; the irides are red; the forehead, round the eye, and all the under parts, are white; the back, the crown of the head, and the wings, are glossy black; the hind part of the neck is marked with dusky spots; the rump is white; the tail the same, inclining to gray; the outer feathers are quite white; the legs red; and the outer and middle toes connected at the base.

But the circumstance which makes this bird differ

from all others is the astonishing and seemingly preposterous length of its legs. Mr. White has given a very pleasing description of this natural curiosity. "In the last week of April, 1779," says he, "five of these most rare birds were shot upon the verge of Frensham pond; a large lake between Woolmer Forest and Farnham. One of these specimens I procured, and found the length of the legs to be so extraordinary, that, at first sight, one might have supposed the shanks had been fastened on, to impose on the credulity of the beholder: they were legs in caricature; and had we seen such proportions on a Chinese or Japan screen, we should have made large allowance for the *fancy* of the draughtsman.

"The birds might with propriety be called the Stilt Plovers. My specimen, when drawn and stuffed with pepper, weighed only four ounces and a quarter, though the *naked* part of the thigh measured three inches and a half. Hence we may safely assert, that these birds exhibit weight for inches, and have incomparably the greatest length of legs of any known bird. The Flamingo, for instance, is one of the most longlegged birds, and yet it bears no manner of proportion to the Himantopus, as this bird is denominated by naturalists; for a cock Flamingo weighs, at an average, about four pounds avoirdupois; and his legs and thighs measure usually about twenty inches. But four pounds are fifteen and a fraction times more than four ounces and a quarter; and if four ounces and a quarter have eight inches of legs, four pounds must have one hundred and twenty inches and a fraction of legs, or somewhat more than ten feet; such a monstrous proportion as the world never saw. If we try the experiment in still larger birds, the disparity will increase.

"It must be matter of great curiosity to see the Stilt Plover move; to observe how it can wield such a

length of lever with such feeble muscles as the thighs seem to be furnished with. At best, one should expect it to be a bad walker: but what adds to the wonder is that it has no back toe. Now, without that steady prop to support its steps, it must, theoretically, be liable to perpetual vacillations and seldom able to preserve the true centre of gravity."

### THE GREEN PLOVER.

THIS bird, which is also called the Golden Plover, is about ten inches and a half in length, and has a short round black bill, sharp at the end, and a little hooked. The tongue, which fills all the inner chap of the bill, is triangular at the tip, horny underneath, and turns a little up. The feathers of the back and wings are black, thick set with transverse spots of a yellowish green colour; the breast is brown, spotted with yellowish green; the belly is white: and, like the long-legged plover, it has no hind claw or spur.

These birds are found in France, Switzerland, Italy, and in most counties of England; in all which places they are esteemed a choicè dish, their flesh being very tender, and of an exceedingly agreeable flavour. They feed chiefly upon worms; though some authors have absurdly affirmed that they live like the grasshopper, upon nothing but dew.

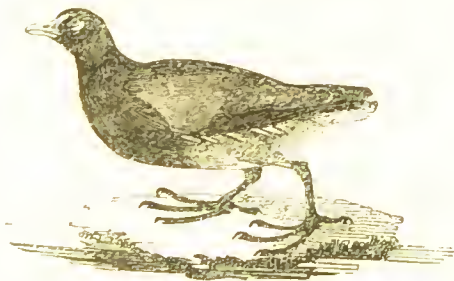
This bird was called *Pardalis* by the ancients, from its beautiful spots, which somewhat resemble those of the leopard.

The RING PLOVER, which is also called the Sea Lark, weighs only two ounces, but is seven inches and a half long. Its bill is half an inch long, and a black line runs from it to the eyes. A white collar encircles the upper part of the neck, and a black the

lower. The breast and belly are white; the back and wings a light brown; and the legs yellow. In summer it frequents our shores, and from this circumstance it has acquired its name of the Sea Lark.

Another species of Plover is denominated the SANDERLING. It is eight inches in length, and weighs only an ounce and three quarters. It frequents many parts of both continents, and is in great plenty on the Lancashire and Cornish coasts. It has a weak black bill about an inch long; an ash-coloured head and neck, streaked with black; the wings and back brownish gray edged with white, and all the under parts of the body white.

### THE WATER-HEN.

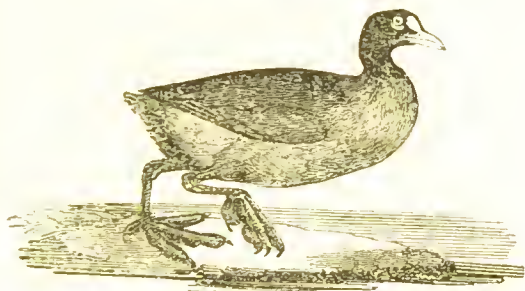


THIS race is considered by naturalists as the tribe which unites the order of the Swimmers with that of the Waders; for although they have long legs and necks like the latter, yet, by being furnished with a slight membrane between their toes, they are enabled to swim like the former; the principal of them are the Water-hen, Moor-hen or Gallinule, and the Coots; these, though placed in different classes by those who

are fond of nice distinctions, may be said perfectly to resemble each other in figure, feathers, and habits: they both have long legs, with thighs almost bare of hair or feathers: their necks are rather long in proportion; their wings short, as are their bills, which are very weak; their general colour is black, and their forehead bald and without feathers. Such are their similarities; and their slight differences are first in size, the Water-hen weighing but fifteen ounces and the coot twenty-four. The bald part of the forehead in the coot is black, in the Water-hen it is of a pink colour. The toes of the Water-hen are edged with a straight membrane; those of the coot have it scalloped and broader. In shape and figure their differences are very trifling, and, if possible, their manner of living is still more so.

Birds of the crane kind are furnished with long wings, and can easily change place, but the Water-hen, whose wings are short, is obliged to reside entirely near those places where her food lies: she cannot take those journeys that most of the crane kind are seen to perform; compelled by her natural imperfections, as well perhaps as by inclination, she never leaves the side of the pond or the river in which she seeks her provision. She builds her nest upon low trees and shrubs, of sticks and fibres, by the water-side. Her eggs, which are seven in number, are sharp at one end, white, with a tincture of green spotted with red. She lays twice or thrice in a summer; her young ones swim the moment they leave the egg, pursue their parent, and imitate all their manners. She rears in this manner two or three broods in a season; and when the young are grown up, she drives them off to shift for themselves. In flying the Water-hen hangs down its legs, and in running it often flirts up its tail, so as to show the white feathers.

## THE COOT.

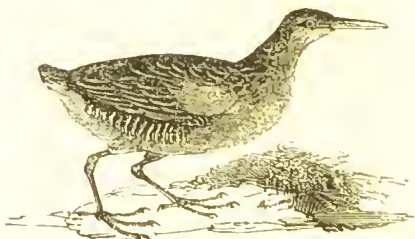


THE Coot is a large bird, being about fifteen inches long, and is always seen in larger streams, and more remote from mankind. The water-hen seems to prefer inhabited situations : she keeps near ponds, moats, and pools of water near gentlemen's houses ; but the Coot keeps in rivers, and among rushy margined lakes : it there makes a nest of such weeds as the stream supplies and lays them among the reeds, floating on the surface, and rising and falling with the water. The reeds among which it is built keep it fast, so that it is seldom washed into the middle of the stream. But if this happens, which is sometimes the case, the bird sits in her nest, like a mariner in his boat, and steers with her legs her cargo into the nearest harbour ; there, having attained her port, she continues to sit in great tranquillity, regardless of the force of the current ; and though the water penetrates her nest, she hatches her eggs in that wet condition. The food of the Coot consists of water insects and small fish ; but they sometimes eat the roots of the bulrush ; they are said likewise to eat grain.

The water-hen never wanders ; but the Coot sometimes swims down the current, till it even reaches the sea. In this voyage these birds encounter a thousand dangers ; as they cannot fly far, they are hunted by dogs and men ; as they never leave the stream, they are attacked and destroyed by otters : they are preyed upon by kites and falcons ; and they are taken in still greater numbers, in weirs made for catching fish. It is in winter that they chiefly repair to the sea, and the channel near Southampton is at times observed to be almost covered with them.

The species called the GREATER COOT is larger than the Common Coot, and has blacker plumage. It is found in Lancashire and Scotland, but is more plentiful on the Continent. In Russia and Siberia it is very common.

### THE WATER-RAIL.



THE Water-ouzel, called also the Water-rail, Water-crake, Water-crow, or Piet, belongs to the stare tribe, and is in size somewhat less than the blackbird. Its bill is black, and almost straight. The eyelids are white. The upper parts of the head and neck are of a deep brown ; and the rest of the upper parts, the belly, vent, and tail, are black. The chin, the fore

part of the neck, and breast, are white or yellowish. The legs are black.

This bird frequents the banks of springs or brooks, which it never leaves; preferring the limpid streams whose fall is rapid, and whose bed is broken with stones and fragments of rocks. The habits of the Water-ouzel are very singular. Aquatic birds with palmated feet swim or dive; those which inhabit the shores, without wetting their body, wade with their tall legs; but the Water-ouzel, which, it must be remembered, is neither a wader nor a diver, but one of the passerine birds, walks quite into the flood, following the declivity of the ground. It is observed to enter by degrees, till the water reaches its neck; and it still advances, holding its head not higher than usual, though completely immersed. It continues to walk under the water; and even descends to the bottom, where it saunters as on dry land. M. Herbert, who watched one immersing itself in the Lake of Nantua, and who communicated the fact to M. de Buffon, says, "I perceived several times, that as often as it waded deeper than the knee, it displayed its wings and allowed them to hang to the ground. I remarked, too, that when I could discern it at the bottom of the water, it appeared enveloped with air, which gave it a brilliant surface, like that on some sort of beetles, which in water are always enclosed in a bubble of air. Its view, in dropping its wings on entering the water, might be to confine this air; it was certainly never without some, and it seemed to quiver." It is a curious fact that even the young ones, before they are quite feathered, are able to make their way under water, the same as the older birds.

These birds are found in many parts of Europe. The female makes her nest on the ground, in some mossy bank near the water, of hay and dried fibres,

lining it with dry oak leaves, and forming to it a portico or entrance of moss. The nest is in its colour so closely similar to that of the surrounding objects that it is almost impossible to discover it except when the bird is entering. The eggs are five in number; white, tinged with a fine blush of red. It will sometimes pick up insects at the edge of the water. When disturbed, it usually flirts up its tail, and makes a chirping noise. Its song in spring is said to be very pretty. In some places it is supposed to be migratory.



# NATURAL HISTORY

OF

## FISHES.

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WONDERFUL as it may appear to see creatures existing in a medium so dense that men, beasts, and birds, must inevitably perish in it, yet experience proves that, besides those species which we are in the daily habit of seeing, the very depths of the immense ocean contain myriads of animated beings, to whose very form we are almost strangers, and of whose dispositions and manners we are still more ignorant. It is probable, indeed, that the fathomless recesses of the deep contain many kinds of fish that are never seen by man. In their construction, modes of life, and general design, the watery tribes are perhaps still more astonishing than the inhabitants of either the land or air.

The structure of fish, and their adaptation to the element in which they are to live, are eminent proofs of divine wisdom. Most of them have the same external form, sharp at each end, and swelling in the middle, by which configuration they

are enabled to traverse their native element with greater ease and swiftness. From their shape, men originally took the idea of those vessels which are intended to sail with the greatest speed ; but the progress of the swiftest sailing ship, with the advantage of a favourable wind, is far inferior to that of fish. Ten or twelve miles an hour is no small degree of rapidity in the sailing of a ship ; yet any of the larger species of fish would soon overtake her, play round as if she did not move, and even advance considerably before her.

The fins of fish are denominated from their situations. The pectoral fins are placed at a little distance behind the opening of the gills, and are large and strong, and serve as well to balance the body as to assist the motion of the fish. The ventral fins are placed towards the lower part of the body, under the belly, and serve chiefly to raise or depress the fish in the water. The dorsal fins are situated on the ridge of the back, and are very large in flat fish : their use, like the pectoral ones, is to keep the body in equilibrio, as well as to contribute to its progressive motion. The anal fins are placed between the vent and the tail, enabling the fish to keep an upright position.

The aquatic race of beings have in general been placed in a very inferior scale of importance, on the score of animal faculties ; yet, natural and experimental observations have proved that they possess all the necessary organs of seeing, hear-

ing, smelling, and feeling, in an equal degree with either quadrupeds or birds.

Voracity is the chief characteristic of aquatic animals. Those with the largest mouth pursue almost every thing that has life; and often meeting each other in fierce opposition, the fish with the widest swallow comes off victorious, and devours its antagonist. As a counterbalance to this great voracity, however, fish are incredibly prolific. Some bring forth their young alive, others produce only eggs: the former are rather the least fruitful; yet even those produce in great abundance. The viviparous blenny for instance, brings forth two or three hundred at a time. Those which produce eggs, which they are obliged to leave to chance, either on the bottom where the water is shallow, or floating on the surface where it is deeper, are all much more prolific, and seem to proportion their stock to the danger there is of consumption. Naturalists declare, that the cod spawns above nine millions in a season. The flounder commonly produces about one million, and the mackerel above five hundred thousand. Scarce one in a hundred of these eggs, however, brings forth an animal: they are devoured by all the lesser fry that frequent the shores, by water-fowl in shallow waters, and by the larger fish in deep waters. Such a prodigious increase, if permitted to come to maturity, would overstock nature: even the ocean itself would not be able to contain, much less provide for, one half of its

inhabitants. But two wise purposes are answered by their amazing increase; it preserves the species in the midst of numberless enemies, and serves to furnish the rest with a sustenance adapted to their nature.

Fish, like the land-animals, are either solitary or gregarious. Some, as trout, salmon, &c. migrate to deposit their spawn. Of the sea-fish, the cod, herring, &c. assemble in immense shoals, and migrate in these shoals through vast tracks of the ocean.

According to Gmelin's edition of the *Systema Naturæ*, fishes are divided into six orders: 1. *Apodal*, having bony gills, and no ventral fins, as the Eels; 2. *Jugular*, with bony gills, and ventral fins before the pectoral ones, as the Cod and Haddock; 3. *Thoracic*, with bony gills, and ventral fins placed directly under the throat, as the Turbot, Sole, Perch, and Mackerel; 4. *Abdominal*, with bony gills, and ventral fins placed behind the thorax, as the Salmon, Pike, Herring, and Carp; 5. *Branchiostagous*, with gills destitute of bony rays, as the Pike-fish and Lump-fish; and 6. *Chondropterygious*, with cartilaginous gills, as the Sturgeon, Shark, Skate, and Lamprey. As this arrangement, however, brings together animals of very dissimilar appearance, we shall not closely adhere to it.

## THE WHALE.



THE Whale, the largest known inhabitant of the sea, is of the cetaceous order of fish, and produces its young alive; and the ancients have described it as being six hundred feet in length. At present it is found in the northern seas only ninety feet in length, and twenty in breadth; but formerly they were taken of a much greater size, when the captures were less frequent, and the fish had time to grow. Such is their bulk within the arctic circle; but in those of the torrid zone, many are seen a hundred and sixty feet long. There are many turnings and windings in this fish's nostrils, and it has no fin on the back. The head is very much disproportioned to the size of the body, being one third the size of the fish; and the under lip is much broader than the upper. The eyes are comparatively small. The tongue is composed of a soft spongy fat, capable of yielding five or six barrels of oil. The gullet is very small for so vast a fish, not exceeding four inches in width. Out of two orifices, in the middle of the head, this creature spouts the water to a great height, especially when it is wounded.

This fish varies in colour; the back of some being red, the belly generally white. Others are black, some mottled, others quite white. Their colours in

the water are extremely beautiful, and their skin is very smooth and slippery. Every species of Whale propagates only with those of its kind, and does not at all mingle with the rest; they are, however, generally seen in shoals, of different kinds together, and make their migrations in large companies from one ocean to another.

The fidelity and fondness of the male and female to each other are extreme. The female produces one young one at a birth, after a gestation of nine or ten months. When she suckles it, she throws herself on one side, on the surface of the water, and it continues with her for twelve months, during which she protects it with the utmost assiduity and courage.

The manner in which the Whale feeds is by swimming rapidly beneath the surface of the sea, with its jaws widely extended. The marine animals enter with the water, and are retained by the whalebone, while the water escapes at the sides.

Whales are chiefly taken in the northern seas. The English send out with every ship six or seven boats, each of which has one harpooner, one man at the rudder, one manager of the line, and four seamen to row. In each boat there are also two or three harpoons, several lances, and six lines, each one hundred and twenty fathoms long, fastened together.

As soon as the whale is struck with the harpoon he darts into the deep, carrying the instrument off in his body; and so rapid is his motion, that if the line were to entangle, it would either snap like a thread, or overset the boat: one man therefore is stationed to attend only to the line, that it may go regularly out, and another is also employed in continually wetting the place it runs against, that the wood may not take fire from the friction. On the Whale's return to breathe, the harpooner inflicts a fresh wound, till at length fainting from loss of blood, the men venture the boat quite up to him, and a long steeled lance is

thrust into his breast and other parts, which soon puts an end to his existence.

When the carcass begins to float, holes are cut in the fins and tail, and ropes being fastened into these, he is towed to the ship, where he is fastened along the larboard side, floating with his back on the water.

In order to take out the blubber and whalebone, several men now get upon the animal with iron calkers or spurs, to prevent their slipping, and separate the tail, which is hoisted on deck. They then cut out square pieces of blubber, weighing two or three thousand pounds each, which by means of the capstan, are also hoisted up. These are cut into smaller pieces, which are thrown into the hold, and left for three or four days to drain. When all the blubber is cut from the belly of the fish, it is turned on one side, by means of a piece of blubber left in the middle, called the cant, or turning piece. They then cut out this side in large pieces as before, and also the whalebone, with the gums, which are preserved entire, and hoisted on deck, where the blades are cut and separated, and left till the men have time to scrape and clean them. The Whale is next turned with his back upwards, and the blubber cut out from the back and crown bone: the whole is concluded by cutting the blubber from the other side. Before, however, the remainder of the body is left to float away, they cut out the two large upper jawbones, which are hoisted on deck, cleansed, and fastened to the shrouds, and tubs are placed under them to receive the oil which they discharge; which oil belongs to the captain.

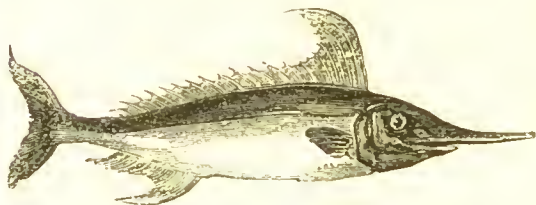
In three or four days they hoist the pieces of blubber out of the hold, chop and put them by small pieces through the bunnholes into the casks.

A Whale, the longest blade of whose mouth measures nine or ten feet, will yield about thirty butts of blubber; but some of the largest will yield upwards of seventy. One of the latter is generally worth about

one thousand pounds sterling ; and a full ship of about three hundred tons burthen will produce more than five thousand pounds from one voyage.

The Whale-fishery begins in May, and continues through the months of June and July : but whether the ships have had good or bad success, they must come away and get clear of the ice by the end of August : so that in the month of September, at furthest, they may be expected home ; but the more fortunate ships often return in June or July.

### THE SWORD FISH.



THOUGH the Sword Fish belongs to a quite different tribe from the whale, yet the inveterate hostility which the former bears to the latter has induced us to bring them both under one point of view. There are two species, which differ from each other only in a very trifling degree ; the one is the BROAD-FINNED, the other the EUROPEAN Sword Fish. The second is the subject of the engraving. It is a very large, powerful, and voracious animal, growing to the length of upwards of twenty feet. The body is of a conical form, black on the back and white under the belly. The mouth is large and toothless, and the tail remarkably forked. The most curious peculiarity of the fish is its long, pointed, sword-like upper jaw, which is of a substance like a coarse kind of ivory. This

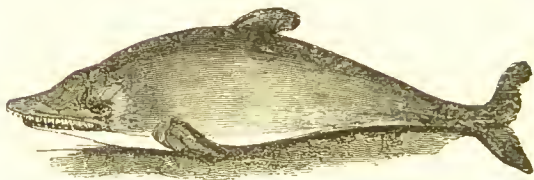
fish has sometimes been found on the British coasts, and is very common in the Mediterranean. The Sicilians consider its flesh as being equal to that of the sturgeon.

The Sword Fish possesses a wonderful degree of strength. The Leopard mau of war was struck by one of them on her return from a cruise. Though the blow was given while the animal was following the ship, and consequently with less force than if it had been given in an opposite direction, the sword passed through one inch of sheathing, three inches of plank, and buried itself four inches and a half in the timber; nearly a quarter of a yard in the whole. The sword was broken off by the shock. To drive an iron pin the same depth into wood would require eight or nine strokes from a hammer of a quarter of a hundred weight; yet the fish drove in his weapon at a single stroke. In the British Museum there is also a plank of a vessel which a fish pierced with the whole length of his sword, though he lost his life by the effort.

Whenever a Sword Fish meets a whale, he instantly assails him. Sometimes two of these animals will join in the attack. The whale has no other means of defence than his tail, the tremendous blow of which the Sword Fish, in general, avoids, and then buries his weapon in his adversary. It is in vain that the whale dives, for he is still pursued by his tormentor, and he is at length compelled to avail himself of his superior swiftness, and to leave the Sword Fish master of the field. As the wounds which he receives cannot penetrate beyond the blubber, they are not productive of much injury to him.

Both species of the Sword Fish are insatiably voracious, and will attack and destroy every living thing that comes within their reach. The formidable manner in which they are armed gives them great advantages over almost all the rest of the finny race.

## THE DOLPHIN.



THOUGH so often incorrectly painted as being of the shape of the letter S, the Dolphin is almost straight, the back being very slightly incurvated, and the body slender; the nose is long, narrow, and pointed, with a broad transverse band, or projection of the skin on its upper part. The mouth is very wide, and has twenty-one teeth in the upper, and nineteen in the lower jaw, somewhat above an inch long, conic at the upper end, sharp pointed, and bending a little in. They are placed at a small distance from each other; so that when the mouth is shut, the teeth of both jaws lock into each other; the spout-hole is placed in the middle of the head; the tail is semilunar; the skin is smooth; the colour of the back and sides dusky; the belly whitish; it swims with great swiftness, and its prey is fish, but particularly cod, herrings, and flat fish. The Dolphin is longer and more slender than the porpus, measuring nine or ten feet in length, and two in diameter.

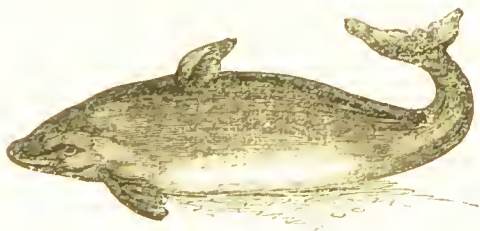
All this species have fins on the back; very large heads; and resemble each other in their appetites, their manners, and conformation, being equally voracious, active, and roving. No fish could escape them, but from the awkward position of their mouth, which is placed in a manner under the head; and their own agility is so great as to prevent them from being often

taken. They seldom remain a moment above water, though their too eager pursuit after prey occasionally exposes them to danger, as they will sometimes follow the object of their pursuit even into the nets of the fishermen.

A shoal of Dolphins will frequently attend the course of a ship, for the scraps that are thrown overboard, or the barnacles adhering to their sides. A shoal of them followed the ships of Sir Richard Hawkins upwards of a thousand leagues. Their gambols and evolutions on the surface of the water are often very amusing. A Dolphin has been known to spring forward more than twenty feet at a single bound. They inhabit the European and Pacific oceans.

The flesh, though tolerably well tasted, is dry and insipid: the best parts are near the head. It is seldom eaten but when young and tender. Dolphins are said to change their colour before they die, and again after they are dead.

### THE PORPUS.



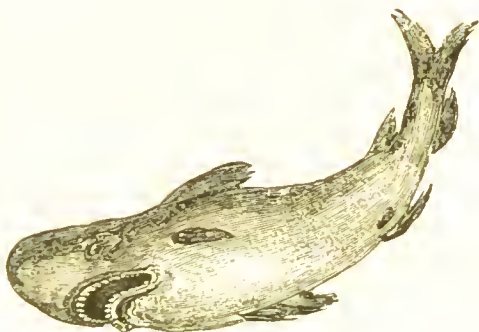
IN its general form the Porpus, or Porpesse, very much resembles the dolphin. It is, however, somewhat less in size, and has a snout much broader and shorter. It is generally from six to seven feet in

length; its body is thick towards the head, but grows slender towards the tail, forming the figure of a cone. In each jaw are forty-eight teeth, small, sharp pointed, and moveable; and so placed that the teeth of one jaw lock into those of the other. The eyes are small, as is the spouthole at the top of the head. In colours the back is black, and the belly whitish, but they sometimes vary. Porpuses are very numerous in all the British seas, but more particularly in the river St. Lawrence, in America; where there is a white kind. They are seldom seen except in troops of six or seven to thirty and upwards, and, like the dolphin, they are very agile and sportive. In the most tempestuous weather they can surmount the waves, and pursue their course without injury. Seamen have a superstitious detestation of them, because they believe their appearance to be ominous of approaching storms.

These animals live chiefly on the smaller fish; at the season when mackerel, herrings, pilchards, and salmon appear, the Porpus swarms; and such is its violence in pursuit of its prey, that it will follow a shoal of small fish up a fresh water river, from whence it finds a difficulty to return. These creatures have been often taken in the river Thames, both above and below London bridge; and it is curious to observe with what dexterity they avoid their pursuers, and how momentarily they recover their breath above the water. It is usual to spread four or five boats over the part of the river where they are seen, and to fire at them the instant they rise. One Porpus yields about a hogshhead of oil, and therefore renders its capture an object of consideration.

It is said that, whenever a Porpus happens to be wounded, all the rest of its companions will immediately fall upon and devour it.

## THE WHITE SHARK.

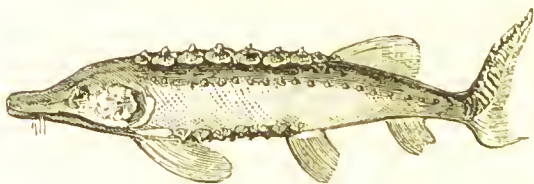


OF the Shark tribe there are several species, but the most ferocious and formidable of them all is the White Shark. He has six rows of teeth, a hundred and forty-four in number, hard, sharply pointed, and of a wedgelike figure, which he has the power of elevating and depressing at pleasure: when he is at rest, they lie quite flat in his mouth; but when his prey is to be seized, they are instantly erected by a set of muscles that join them in the jaw. The whole body and fins are of a light ash colour. With open jaws, goggling eyes, and large and bristly fins, agitated like the mane of a lion, his whole aspect is an emphatical picture of the fiercest, deepest, and most savage malignity. He swims with immense velocity, and possesses great muscular strength in his tail and fins. These creatures are the dread of sailors in all the hot climates, where they constantly attend the ships, in expectation of what may drop overboard; and if any of the men have that misfortune, they must

almost inevitably perish. Their only chance of safety consists in their availing themselves of the time which it takes him to throw himself on one side in order to seize his prey.

In the pearl fisheries of South America, every negro, to defend himself against these animals, carries with him into the water a sharp knife; which, if the fish offers to assault him, he endeavours to strike into its belly; on which it generally swims off. The officers who are in the vessels keep a watchful eye on these voracious creatures; and, when they observe them approach, shake the ropes fastened to the negroes, to put them on their guard. Many of them, when the divers have been in danger, have thrown themselves into the water, with knives in their hands, and hastened to their defence; but too often all their dexterity and precaution have been of no avail.

### THE STURGEON.



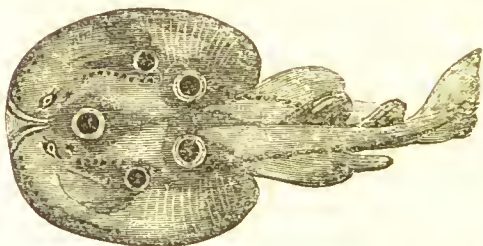
FORMIDABLE as this large and finely tasted fish is in its appearance, it is perfectly harmless; the body, which is from six to eighteen feet in length, is pentagonal, armed from head to tail with five rows of large bony tubercles, each of which ends in a strong recurved tip; one of these is on the back, one on each side, and two on the margin of the belly. The snout is long, and obtuse at the end, and has the tendrils

near the tip. The mouth, which is beneath the head, is somewhat like the opening of a purse, and is so formed as to be pushed suddenly out, or retracted. The upper part of the body is of a dirty olive colour; the lower parts silvery; and the tubercles are white in the middle. The tendrils on the snout, which are some inches in length, have so great a resemblance in form to earthworms that, at first sight, they might be mistaken for them. By this contrivance, this clumsy toothless fish is supposed to keep himself in good condition, the solidity of his flesh evidently showing him to be a fish of prey. He is said to hide his body among the weeds near the seacoast, or at the mouths of large rivers, only exposing his tendrils, which small fish or sea-insects, mistaking for real worms, approach to seize, and are sucked into the jaws of their enemy. He has been supposed by some to root into the soil at the bottom of the sea or rivers; but, if this were the case, the tendrils abovementioned, which hang from his snout over his mouth, must be very inconvenient to him; as he has no jaws, it is evident that he lives by suction, and, during his residence in the sea, marine insects are generally found in his stomach. From its quality of floundering at the bottom of rivers, the Sturgeon has received its name from the Germans, the word *stoeren* signifying to wallow in the mud. Its flesh, however, is delicious food. The celebrated delicacy called *caviar* is made from the roe.

Sturgeons are found both in the European and American seas. At the approach of spring, they leave the deep recesses of the sea, and enter the rivers to spawn; and from May to July the American rivers abound with them. They annually ascend our rivers, in summer, particularly the Eden and the Esk, but not in large numbers. One which weighed four hundred and sixty pounds was taken in the Esk about thirty years ago. As they are not voracious fish, they are

never caught by baits, but in nets composed of small cords, and placed across the month of the river, but in such a manner that, whether the tide ebbs or flows, the pouch of the net goes with the stream.

### THE TORPEDO.



THERE are about twenty species of the Ray, of all which the Torpedo, or Electric Ray, is the most remarkable, as it possesses some very peculiar qualities. In the general structure of its body it has not been found to differ materially from the rest of the rays. The electric or benumbing organs are placed one on each side of the gills, reaching from thence to the semicircular cartilages of each great fin, and extending longitudinally from the interior extremity of the animal to the transverse cartilage which divides the thorax from the abdomen, and within these limits they occupy the whole space between the skin of the upper and under surfaces. Each organ is about five inches in length, and at the anterior end, about three in breadth; they are composed of perpendicular columns, reaching from the upper to the under surface, varying in length according to the thickness of the parts of the body, from an inch and a half to half an inch. The head and body of the Torpedo are distinct

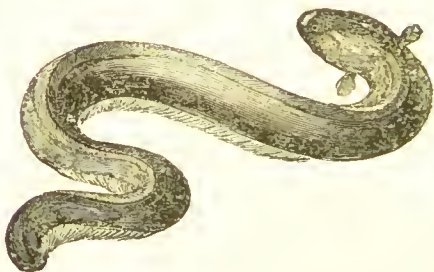
from each other, and nearly of a circular form: the skin is smooth, of a dusky brown colour above, and white underneath: the ventral fins form on each side, at the end of the body, nearly a quarter of a circle: the tail is short, and the dorsal fins are placed near its origin: the mouth is small, and, as in other species, there are on each side below it five breathing apertures.

The electric rays are found in many of the European seas, and the fishermen often discover it in Torbay, and sometimes of such a size as to weigh eighty pounds. They are partial to sandy bottoms, in about forty fathoms of water, where they often bury themselves by flinging the sand over them, by a quick flapping of all the extremities. In Torbay they are generally taken like other flat fish, with the trawl net; and instances have occurred of their seizing a bait. They bring forth their young in autumn.

The fish's benumbing or torporific quality is one of the most extraordinary faculties in nature. The ignorant stranger might imagine he is only handling a skate, when he is instantly struck numb. Upon touching the Torpedo with the finger, it frequently, though not always happens, that the person feels an unusual pain and numbness, which suddenly seizes the arm up to the elbow, and sometimes to the very shoulder, or head. Its chief force is at the instant it begins; it lasts but a few moments, and then vanishes entirely. If a man do not actually touch the Torpedo, how near soever he holds his hands, he feels nothing: if he touch it with a stick, he feels a faint effect; if he touch it through the interposition of any pretty thin body, the numbness is felt very considerably; if the hand be pressed very strong against it, the numbness is the less, but still strong enough to oblige a man speedily to let go.

The engraving displays the interior of the lower electric or galvanic organ.

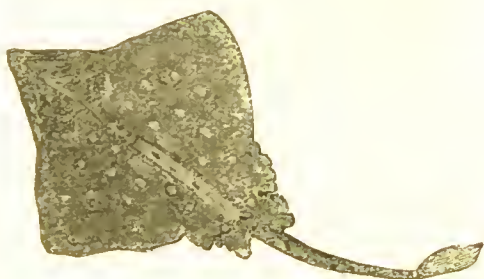
## THE ELECTRICAL EEL.



THOUGH the Electrical Eel, or *Gymnotus*, belongs to a quite different class from the torpedo, yet we have placed them together in consequence of the similarity of their electric powers. Of the *Gymnotus* tribe some of the species inhabit the fresh water, and others the ocean, and with the exception of three of them all are confined to the New Continent. The species which is the subject of the engraving is common in South America, where it is found only in the rocky parts of rivers, far from the sea. It is from three to four feet in length, and ten or twelve inches in circumference in the broadest part of the body; and has the capability of swimming backward as well as forward. In colour it resembles the common eel. The head is flat, and the mouth wide and toothless. From the point of its tail to within six inches of its head extends a fin about two inches deep, and which is an inch thick at its junction with the body. As there are several annular divisions, or rather rugæ of the skin, across the body, it would seem that the fish partakes of the vermicular nature, and can contract or dilate itself at pleasure. The shock which it gives

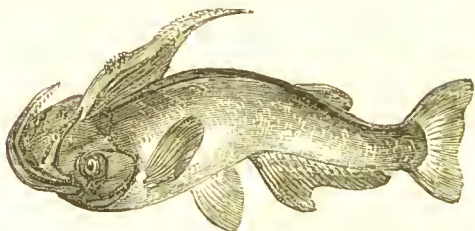
is so exceedingly strong that persons have been knocked down, and almost killed by it. The animal can give it at will, and it uses it to stun its prey. The electrical organs consist of two pair, and constitute more than one-third of the fish. Humboldt gives a curious account of the mode in which these fish are caught by the natives of South America.

### THE SKATE.



This fish is the largest and best of its tribe; the flesh being white, firm, and well flavoured. It sometimes attains an immense size. The body is broad and flat, of a brown colour on the back, and white on the belly. The principal difference between it and the thornback consists in its having sharp teeth and a single row of spines on the tail, whilst the latter has blunt teeth, and several rows of spines both on the back and tail. The females produce their offspring from May till September. Each of the young ones is enclosed in an angular oblong bag, of a maroon colour, a substance like thin parchment or leather, and having two horns at each end. These, which are sometimes cast on shore after storms, are called purses by the fishermen.

## THE HORNED SILURE.



THIS fish has a broad, flat, thin head; and the horns, which occupy the place of eyes in other species, are armed with short crooked spines like teeth, and are probably weapons of defence. The head and body are entirely covered with a skin resembling leather; the eyes lie on each side of the head near the mouth; and the tail fin is slightly forked.

This fish is of a very dark green colour; but the sides are somewhat lighter. Another remarkable peculiarity in this fish is the dorsal fin: it is close to the head, and its front ray is long, stiff, dentated like the horns, and is probably an instrument of defence also. The belly is short and thick; and the lateral line goes meandering along the middle of the body, and puts out branches each way. This species grows to a considerable size; its flesh is eatable, but not much sought after. It is found near the shores of Asia and Surinam.

One of these fish caught at Surinam, on examination, was observed to have its mouth filled with yellow eggs, in none of which, however, could be found a fish completely formed; from which it is concluded, that the Silure, to defend her eggs from the voracious tribes, hatches them instinctively in her mouth. But

she is supposed at times to emit them from her mouth, when in search of food to appease her appetite, and when satisfied, to take them into her mouth again.

Of the Silure tribe, there are nearly thirty different species, most of them natives of the Indian and American seas. One of them, the *SILURIS CLARIAS* of Linnæus, is called Scheilan by the Arabians. Hasselquist relates, that he saw the cook of a Swedish merchant ship die of the poison communicated by a prick from the bone of the breast fin of this fish.

### THE PORCELLUS, OR SEA SCORPION.

THE mouth of this curious fish is wide, but toothless; the head is flattish in the middle, and over each eye there appears a serrated ridge rising from it. The gills on each side have sharp bony spurs on their edges tending backwards, from which it derives its latter name. The body is almost as wide as it is deep; the under side is of a silverish colour, tinged with red; the upper is of a dusky brown, sprinkled with small black spots, with some large clouds of black. It has a lateral line from head to tail, and also two fins on the back, and one on the belly behind the vent, and tail fin. Two narrow fins or feelers are placed under the fore part of the belly, of a whitish colour, each having only three spines.

This fish is found in the Mediterranean sea, and in several parts of the ocean. It keeps near the shores, and lies concealed among seaweed, to prey on small strayed fish.

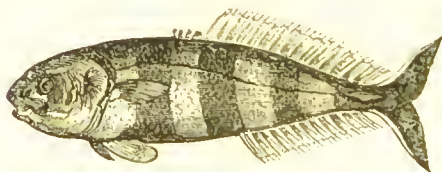
### THE STAR GAZER.

THE head is large, quadrangular, and covered with a rough helmet, ending in two spines above, and five smaller ones below. The mouth opens upwards; and,

when the lower jaw is removed, the tongue appears, which is thick, short, and strong, and full of small teeth. Inside the lower jaw, there is a membrane terminating by a long filament; the fish, opening its mouth, sets this in motion, which attracts little fish, who endeavour to seize it, and are instantly devoured: there are two barbles from each lip, which serve for the same purpose; and this fish often conceals itself among the seaweed, leaving only the barbles visible, when it is watching for prey. In the upper jaw there are two oval apertures, and several little barbles at the lower; and near each eye is a round aperture. The eyes lie quite at the top of the head, very close together, and prominent, as if starting upwards; the pupil is black, the iris yellow.

The Star Gazer inhabits the Mediterranean, lying in deep places near the shore. It seldom exceeds a foot in length, and lives on small fish and worms.

### THE PILOT FISH.

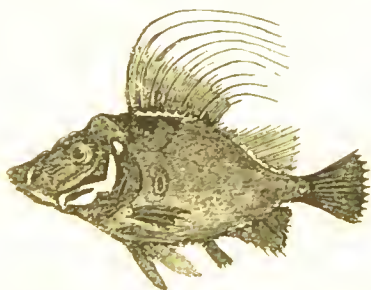


THE body is long and banded, with four loose spines on the back; the head compressed, rounded off in front, without scales as far as the gills. The mouth is small; the jaws are of an equal length, and furnished with small teeth; the palate has a curved row of similar teeth in front, and the tongue has teeth all along; it is short, fleshy, and hardly moveable. The nostrils are double, nearer the muzzle than the eyes.

The lateral line is curved first upwards and then downwards, and is lost at the end of the tail; which is raised similar to many of the mackerel kind.

This species is found in the Mediterranean, Southern Ocean, East Indies, and at the Cape of Good Hope. It grows to a foot and a half in length; and is well tasted. It derives its name from being commonly seen with the shark, to which it appears to point out its prey. The circumstance of its guiding the shark was long a matter of doubt, but appears now to be an ascertained fact. M. Geoffroy, Professor of Natural History in the Museum at Paris, when near Malta, in March, 1798, saw two of the Pilot Fish lead a shark to a piece of bacon which a seaman had let down by a line and hook.

### THE JOHN DOREE.



THE John Doree was known to the ancients, and is mentioned in the writings of Ovid and Pliny. Some of the Catholics, in consequence of its having a dark spot, like a finger mark, on each side of the head, believe it, and not the haddock, to have been the fish from which the apostle Peter took the tribute money, by order of our Saviour. The modern Greeks deno-

minate it the fish of St. Christopher, from a legend which relates that it was trodden on by that saint when he was carrying his divine burthen across an arm of the sea. In modern times, however, it derives its fame from the delicacy of its flesh, which renders it a great favourite with epicures. The celebrated Quin is said to have taken a journey to Plymouth, merely that he might eat it in all its perfection. Tradition relates him to have exclaimed that if his Satanic majesty, in angling for him, were to bait his hook with a Doree, he could not avoid biting.

The Doree is a very voracious fish. It is found in the North Sea, the British Channel, the Mediterranean, and the Atlantic. Its shape is rhomboidal, with the sides much compressed. The mouth is large, and the snout long, composed of several cartilaginous plates, which fold over each other, to enable the fish to seize its prey. Its teeth are strong and numerous, and it has a longitudinal range of strong spires on each side of the dorsal fins, and also from the mouth all the way to the second anal fin. In colour it is of a dark green, marked with black spots, and having a golden gloss, whence originates its name.

### THE MACKEREL.



THE common Mackerel, while alive, is one of the most beautiful fish that frequents our shores. It has a thick, round, fleshy body, but tapering towards the tail, which is bifurcated. Its body is of a very

elegant form, and beautifully variegated with the brightest hues of blue, green, and a silvery whiteness. Death in some measure impairs the colours, but it by no means obliterates them. Several varieties of this fish inhabit the ocean: they belong to the voracious class, and some of them grow to a very great size. It is said that they are fond of human flesh, and Pontopidan tells a story of a man whom they fastened upon and destroyed, while he was bathing. As they are found in the German ocean, the Baltic, and Mediterranean, it is not surprising that the ancient naturalists were acquainted with them. Subsequent naturalists have reckoned about twenty-five varieties, but of these, only three are found upon our coasts; these are the COMMON MACKEREL, the BASTARD or HORSE MACKEREL, and the THUNNY.

This fish emits a phosphoric light when fresh from the sea. When taken out of the water it soon dies, and even in the water, if it advance with too much impetuosity against the net. It is caught with that instrument, or with a hook baited with bits of red cloth, or small herrings and pieces of other kinds of fish or flesh. In some places it is taken by lines from boats, as during a fresh gale of wind it readily seizes a bait: it is necessary that the boat should be in motion, in order to drag the bait along near the surface of the water. The great fishery for Mackerel is on some parts of the west coast of England. This is of such an extent, as to employ in the whole a capital of nearly two hundred thousand pounds. The fishermen go out to the distance of several leagues from the shore, and stretch their nets, which are sometimes several miles in extent, across the tide, during the night. The meshes of these nets are just large enough to admit the heads of tolerably large fish, and catch them by the gills. A single boat has been known to bring in, after one night's fishing, a cargo that has sold for nearly seventy pounds.

The Maekerel is very good eating; but as it is fat, and consequently difficult of digestion, it is not fit for weakly persons or valetudinarians. The celebrated *garum* of the Romans was a pickle prepared for this fish. In the Mediterranean the roes are used for *caviar*.

## THE SALMON.

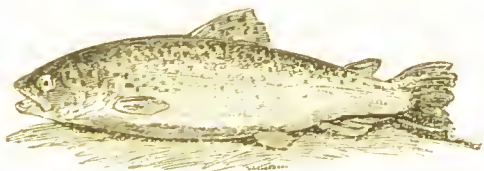


THE Salmon, which was known to the Romans, but not to the Greeks, is a soft-finned abdominal fish. They are distinguished from other fish by having two dorsal fins, of which the hindermost is fleshy and without rays; they have teeth both in the jaws and in the tongue, and the body is covered with round and minutely striated scales. The colour of the back and sides is gray, sometimes spotted with black and sometimes plain; the covers of the gills are subject to the same variety, and the belly is silvery; the nose is sharp pointed, and in the males the under jaw sometimes turns up in the form of a hook.

The Salmon lives in fresh as well as in salt waters, but seems to be in a great measure confined to the northern seas, for it is not known in the Mediterranean, or the waters of other warm climates. In autumn it forces itself hundreds of miles up the rivers, for the purpose of depositing its spawn, and during this peregrination it is not to be stopped even by cataracts. On the Lisley they leap over a fall which is nineteen feet in height.

Rapid and stony rivers, where the water is free from mud, are the favourite places of most of the Salmon tribe, the whole of which is supposed to afford wholesome food to mankind. The chief English rivers in which Salmon are caught are the Thames, the Severn, the Trent, and the Tyne. The Scotch fisheries are very productive. These fish when taken out of their natural element very soon die; to preserve their flavour they must be killed as soon as they are taken out of the water. The fishermen usually pierce them near the tail with a knife, when they soon die with loss of blood.

### THE TROUT.



THE general shape of the Trout is rather long than broad; in several of the Scotch and Irish rivers, they grow so much thicker than in those of England, that a fish, from eighteen to twenty-two inches, will often weigh from three to five pounds. This is a fish of prey, has a short roundish head, blunt nose, and wide mouth, filled with teeth, not only in the jaws, but on the palate and tongue; the scales are small, the back ash colour, the sides yellow, and, when in season, it is sprinkled all over the body and covers of the gills with small beautiful red and black spots: the tail is broad.

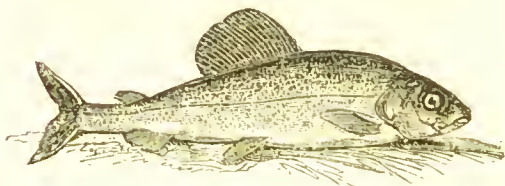
There are several sorts of Trouts, differing in their size, shape, and hue; but the flesh of the best is either red or yellow, when dressed; the female has a smaller

head and deeper body than the male, and its spots vary greatly in different waters, and at different seasons.

This fish, although very delicate, and at present well known, was in no esteem among the ancients. It is said to be in season from March to September. It is, however, fatter from the middle to the end of August, than at any other time. The duration of its life is believed to be about eight or ten years.

The Trout is not easily caught with a line, being at all times exceedingly circumspect. The baits used are worms or artificial flies. The season for fishing is from March till Michaelmas. Cloudy weather is generally preferred for angling, but there is no particular time of the day.

### THE GRAYLING.



THE Grayling or Umber, is of a very elegant form; the body is less deep than that of the trout, though longer; the head small, with protuberant eyes, the irides of which are silvery, speckled with yellow; the mouth is of a middle size, and the upper jaw the largest. The teeth are very minute, seated in the jaws and roof of the mouth, and feel like a fine file; the head is dusky, the covers of the gills are of a glossy green, yet when in prime perfection, these parts are blackish; the back is of a dusky green, inclining

to blue; the sides are of a fine silvery gray; when first taken, however, they seem to glitter with spangles of gold, and are marked with black spots irregularly placed. The side line is nearly straight; the scales are large, and the lower edges dusky, forming straight rows from the head to the tail, which is much forked; the large dorsal fin is spotted, the other fins are plain; it is rather hog-backed, and from the nose and belly touching the ground together, it is supposed that this fish feeds mostly at the bottom.

The Grayling haunts rapid and clear streams, particularly such as flow from mountainous countries: it is found in those of Derbyshire, Shropshire, Yorkshire, &c. In Lapland (where it is very common), the inhabitants use its entrails, instead of rennet, to make the cheese, which they get from the milk of the reindeer. The stomach is so hard and thick, that to the touch it appears like cartilage. The Grayling seldom exceeds sixteen inches in length; yet one was taken near Ludlow about half a yard long, and weighing four pounds six ounces; and near Shrewsbury one was caught which weighed full five pounds. It is from the swiftness of its motion that it derives its name of Umber.

These fish bite during the whole of cool, cloudy days; but the preferable time in spring and summer is from eight until twelve in the morning, and from four until sunset in the evening; and from September to January in the middle of the day. Worms, insects, and water snails are their principal food. They spawn in April and May. From September to January is the season at which they are in the greatest perfection. They are very voracious, rise eagerly at the fly, will pursue the bait after they have missed it several times, and thus afford great amusement to the angler. The ancients believed that the oil obtained from them would obliterate freckles and marks of the small-pox.

## THE RED CHAR.



THE head of this fish terminates in a blunt point, and its body is covered with very minute scales; the lateral line is straight. All the fins except the dorsal are reddish. This species is very properly denominated the Alpine Char, by Linnæus; for its constant residence is in the lakes of the high and mountainous parts of Europe. A few are found in some of the lakes in Wales, and in Loch Inch, in Scotland; from which last, it is said to migrate into the Spey to spawn. Seldom, however, does this species venture into any running stream; its principal resort is in the cold lakes of the Lapland Alps, where it is fed by the innumerable quantity of gnats that infest those dreary regions.

The largest and most beautiful Chars are found in the Lake of Winander-Mere, in Westmoreland, where there are three species, the RED, the GILT, and the CASE CHAR. These kinds are nearly similar in their external appearance; but the time and manner of their spawning are very different. The method of taking these fish is with nets, or trammels as they are called, which are furnished with bait to allure the fish, and left for several days, till they are known to enter them. Potted Char is a delicacy which is in high repute on the Continent as well as in England.

## THE SMELT.



THERE are two species of this soft-finned, abdominal fish; which derives its name ("Smell it"), from having, in the opinion of some, the scent of a violet, of others, that of a cucumber; and so strange is the disagreement respecting the odour of this fish, that the Germans bestow upon it the name of Stink-fish.

The first species, called the *HEPSETUS*, has about twelve rays in the fin next the anus. It is found in the northern seas, and is very plentiful in the sea near Southampton, and on other coasts of our island. The length is about five inches, and the tail is much forked. It is a beautiful little fish, semipellucid, covered with scales; the colour silvery, tinged with yellow; beneath the side line is a row of small black spots, and the under jaws are rather prominent; in the front of the upper are four large teeth; the flesh is tender, and of a delicate taste.

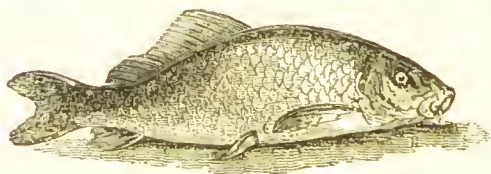
The other species, called the *MENIDEA*, has twenty-four rays in the fin next the anus. This is a very small pellucid fish, with numerous black points interspersed: it has many teeth in the lips, but none in the tongue or jaws. It is found in the fresh waters of Carolina. The skin of this fish is in general so thin, that with a good microscope the circulation of its blood may be seen.

The Smelt is to be angled for (when the tide runs

up is preferable) with a paternoster line, having five or six hooks so many inches from each other, and baited differently. The best baits are very small shrimps not boiled, or the tail of a boiled one; next to these are gentles and red paste; also that made of boiled shrimps, fine white wheat bread, and a little honey, cadis, and blood worms; and they will sometimes take a bit of their own species. Some crumbs of bread should now and then be thrown in to keep them together.

These fish are taken in abundance in the Thames and Dee in November and the two succeeding months; in other rivers not until February. The usual season at which they spawn is about the months of March and April. Smelts vary considerably in size. The largest that Mr. Pennant ever heard of weighed half a pound, and was thirteen inches in length.

### THE CARP.



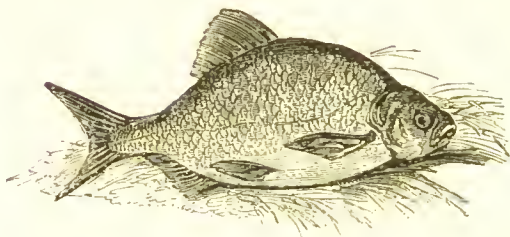
THE mouth of this fish is toothless; their gills have three rays, and their belly fins frequently nine. Their form is somewhat thick, and their colour blue-green above, greenish-yellow mixed with black on the upper part of their sides, whitish beneath, and the tail yellow or violet. The scales are large. On each side of the mouth there is a single beard, and above this another shorter. The dorsal fin is long, extending far towards the tail, which is forked. Carp are found in

the slow rivers and stagnant waters of Europe and Persia, and principally in deep holes, under the roots of trees, hollow banks, or great beds of flags, &c. They seldom exceed four feet in length, and twenty pounds in weight; but some are said to have reached a far greater magnitude. Some five feet long have been caught in the Dneister, and Jovius states that they have been found, in the Lake of Como, weighing no less than two hundred pounds. Carp are supposed to have been brought to this country by a Sussex gentleman, about the year 1514, in which county perhaps, this fish abounds, more than in any other.

Carp, from their quick growth and vast increase, are the most valuable of all fish for the stocking of ponds; and if the breeding and feeding of them were better understood, and more practised, the advantages resulting from them would be very great. These fish spawn in June, and sometimes in May, when it is a forward spring, seeking places covered with grass or plants, for depositing their eggs. They feed principally on mudworms, and aquatic insects.

In his general habits the Carp displays so much cunning, that he has received from the country people the name of the River Fox. He will often leap over a net, or bury himself so deep in the mud that it passes over without touching him. By being constantly fed, however, he may be rendered so familiar that he will come at a signal, beg for bread, and even allow himself to be handled. He is a very long lived fish, and so remarkably tenacious of life that he may be kept alive, in wet straw or moss, more than a fortnight. In this situation he must be well wrapped up in the wet moss, with only his mouth remaining out, and be suspended in some cellar or other cool place; besides which he must be often plunged into water, and fed with white bread and milk.

## THE BREAM.



THE Bream has a blunt snout, with the upper jaw a little protruded; the front is dark blue, and the cheeks are inclining to yellow. The fish, when at full growth, is broad and thick; the young ones, on the contrary, are narrow and long. They are covered with pretty large bright scales, the back is blackish, sharp, and resembles a bow on the stretch. The lateral line is curved towards the belly, and ornamented with about fifty black spots. The tail is crescent-shaped, and of a dark blue colour.

This fish is an article of great importance on the Continent, though its flesh is not equal to that of the carp. It is found in all the great lakes, and in rivers which have a gentle current, and a bottom composed of marl, clay, and herbage; and it abides in the deepest parts. It is taken mostly under the ice; and this fishery is so considerable that, in some of the lakes belonging to Prussia, there have been taken to the value of two hundred pounds at a time; they are also caught in great quantities in Holstein, Mecklenburg, Livonia, and Sweden: in a lake near Nordkøping, there were taken at one time in March, 1749, no less than fifty thousand, weighing eighteen thousand two hundred pounds.

The Bream may be taken with divers kinds of nets in spawning time, which is in May: and, being fond of worms, will readily take a bait.

### THE ROACH.



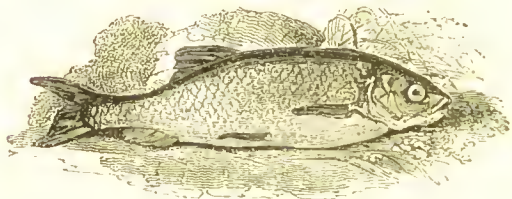
THIS fish, like the carp and the bream, belongs to the cyprinus order, and is remarkable for its numerous progeny. It is deep, yet thin made, in shape nearly resembling the bream, but approaching to the carp by the breadth and shape of its scales, which are large and deciduous. The soundness of the flesh has become proverbial, but it is bony, and of an insipid taste. The belly fins are of a bright crimson, and the irides of the eyes sparkle like rubies and granate. The size of the Roach is commonly between nine and ten inches, and its weight from half a pound to two pounds, but it sometimes attains a much greater bulk. The Roach is so silly a fish that it has received the name of the Water Sheep. Deep still rivers are its chief haunts, and there it is found in large shoals.

### THE DACE.

THIS fish is of a silver colour, except the back, which is brownish, and rounded. It has a lengthened body, middling sized scales, six gray fins, a forked tail, and the lateral line curved downwards. The aperture of the mouth is middle sized, and, like the rest of the

leather-mouthed tribe, the teeth are in the throat. It is prolific, gregarious, and very lively, it being fond of playing near the surface of the water in summer. In its motions it is rapid. Its usual haunt is where the water is deep, and the stream is gentle, near the piles of bridges. It seldom weighs more than a pound and a half, or exceeds ten inches in length. The Dace is found in the south of Germany, France, and Italy, as well as in England.

### THE CHUB.



THE Chub is of a coarse nature, and when out of season is full of small hairy bones; it seldom exceeds the weight of five pounds. The body is of an oblong shape nearly round; the head, which is large, and the back, are of a deep dusky green, the sides silvery, and the belly white; the pectoral fins are of a pale yellow, the ventral and anal ones red; and the tail brown, tinged with blue at its extremity, and slightly forked. This fish frequents the deep holes of rivers, under hollow banks, but in the summer season, when the sun shoots his golden rays through the waters, to the smooth pebbles that pave the bed of the stream, it ascends to the surface, and lies quiet under the cooling shade of some trees that spread their foliage on the verdant banks; but yet, though it seems to indulge itself in slumbers, the fear of danger, that

innate sense of self-preservation, one of the first laws of nature, keeps the creature awake, and at the least alarm it dives with rapidity to the bottom. It lives on all sorts of insects; in March and April, the Chub is to be caught with large red worms; in June and July with flies, snails, and cherries; but in August and September, the proper bait is good cheese pounded in a mortar, with some saffron and a little butter. Some make a paste of cheese and Venice turpentine for the Chub in winter, at which season this fish is much better than at any other; the bones are less troublesome, being more easily separated from the flesh in this season, and the flesh more firm and better tasted; the roe is also well flavoured in general. If the angler keeps his bait at the bottom in cold weather, and near the surface in the hot season, the fish is sure to bite soon, and will afford much pleasing sport. When the Chub seizes a bait, he bites with so much eagerness that his jaws are often heard to chop like those of a dog.

The ancient naturalists have enumerated five varieties of this fish; some of which are found in the Danube and the Rhine. The above species inhabits most of the rivers in this island.

### THE PARROT FISH.

THE head of this fish is somewhat similar to that of the carp. The body is broad, the tail narrow. The ground colour is red, which is beautifully relieved by broad silvery stripes all along the body; the belly is white. The fins are small; the scales broad, thin, finely radiated, and very loose. The pectoral, tail, and ventral fins are yellow at their origin, and gray at the extremities; and a kind of spine runs along the root of the ventral fin. This species is found in both Indies.

## THE GOLD FISH.



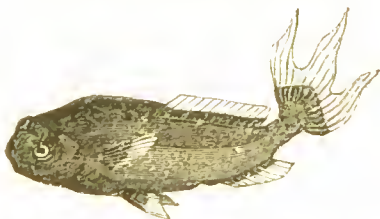
THESE fish are esteemed the most elegant of all the finny tribe. The male is of a bright red colour from the top of the head to the middle of the body; the rest is of a gold colour, but it is so splendid that the finest gilding cannot approach it. The female is white, but her tail and half of her body resembles the lustre of silver. The red and white colours are not always the distinguishing marks of the male and female; but the females are known by several white spots which are seen round the orifices, that serve them as organs of hearing, and the males by having three spots much brighter. The nostrils of the Gold Fish are double, wide, and placed near the eyes. The body is covered with large scales, and the tail is forked; but there is no fish in which the fins vary so much. The colour of the Gold Fish changes with age. In the first year it is generally black, a colour very rarely found among the inhabitants of the watery element. In the course of a few years, silver spots make their appearance, and gradually increase till they cover the whole body. It then turns red, and becomes more beautiful the older it grows. Sometimes, indeed, it turns red before it assumes the silvery hue, and in some instances the fish is red from the very first.

These fish are natives of China, and the handsomest species is found in a lake not far from the mountain

of Tsieuking, near the city of Tchongou, situated in the province of Che Kiang, in China. From this place they were transported to the other provinces of that empire, to Japan, and at length to Europe. They were first brought to England in the year 1661, and they now breed in this country as readily as the carp.

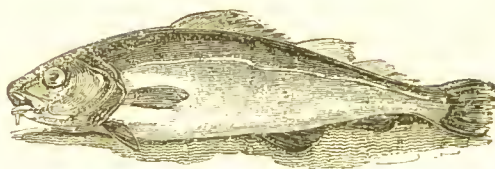
The SILVER FISH is a native of the seas in the vicinity of the Cape of Good Hope, and is about the size and shape of a small carp, which it also resembles in taste. It is of a white colour, transversely striped with silvery lines.

### THE TELESCOPE CARP.



THE whole body of this fish, and the ground colour of the fins, are of a beautiful sanguineous red, darker towards the back, and lighter towards the belly; the membranes of the fins are almost white, and the red rays shining through them have a very fine effect; the three white points of the tail form to the idea a trident or a tulip. The head is short but large, the mouth is small, the nostrils are single. The pupil of the eye is black, the iris yellow; and the eyes are protuberant; the back is round; the lateral line nearer the back than the head. The scales are large; the rays of the fins ramified. This beautiful fish is found in the fresh waters of China, where it is kept like the gold fish, of which it is probably a variety.

## THE COD.



THE head of the Cod fish is smooth ; the colour on the back and sides is of a dusky olive, variegated with yellow spots ; its belly is white ; the lateral line runs from the gills to the tail, which at the abdomen is curved, but elsewhere is straight ; its scales are very small, and adhere firmly to the skin ; its roes are large ; at the angle of the lower jaws there hangs a single beard, which is short, seldom exceeding a finger's length ; its tongue is broad ; it has several rows of teeth, like the pike ; and in the palate, near the orifice of the stomach, and near the gills, it has small clusters of teeth. It has three back fins, two at the gills, and two at the breast, two others behind the anus, and the tail is plain.

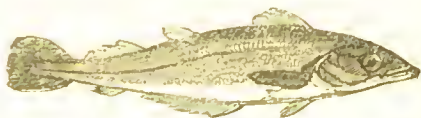
These fish are found only in the seas of the northern parts of the world ; and the principal places of rendezvous are the sandbanks of Newfoundland, Nova Scotia, and New England. These shallows are their favourite situations, as they abound with worms, a food that is peculiarly grateful to them. Another cause of their attachment to these places is their vicinity to the polar seas, where they return to spawn. There they deposit their roes in full security, and afterwards repair, as soon as the more southern seas are open to the banks for subsistence ; consequently the Cod may justly be placed at the head of the migrating or wandering tribes of fish. Few are taken

north of Iceland, and the shoals never reach so far south as the Straits of Gibraltar.

Previous to the discovery of Newfoundland, the principal fisheries for Cod were in the seas off Iceland, and off the western islands of Scotland. To the former of these the English resorted near four centuries, and had no fewer than one hundred and fifty vessels employed in the Iceland fishery in the reign of James I. The hook and line are the only implements which are used in taking this fish, and they are caught in from sixteen to sixty fathoms water. Fifteen thousand British seamen are employed in this fishery. An expert hand will sometimes catch four hundred in a day.

The Cod is one of the most prolific of fish. In the roe of only a middling sized Cod fish Leuwenhoeek observed more than nine millions of eggs. They begin to spawn in January in the European seas. Their principal food consists of the smaller species of fish, worms, shell fish, and crabs, and their stomachs are capable of dissolving the greatest part of the shells that they swallow. They grow to a great size. The largest that ever was seen was taken at Scarborough, in 1775. It weighed seventy-eight pounds, and was five feet eight inches in length.

### THE WHITING.



THE name of this fish arises from the silvery hue that pervades the whole body, which is long, and covered with small, round, thin, silvery scales. The head

ends in a point; the eyes, near which are the nostrils, are round, with a large black pupil, and silvery iris. The upper jaw is armed with several rows of teeth, of which those in front are the longest; the lower jaw has but one row. The back is of an olive colour, and arched, as is the belly. The sides are somewhat compressed, and the anus is nearer the head than the tail. The lateral line has a straight direction. The fins are white, except the pectorals and tail, which are blackish.

This fish is found in the Baltic and North Seas, though not numerous in the former; but they are plentiful on the coasts of Holland, France, and England, where they are reckoned the most delicate and wholesome species of the genus. Their flesh is so easily digestible, that it is prescribed to persons the powers of whose stomachs are impaired. They attain the length of a foot, sometimes one and a half, rarely two; but on the Doggerbank they are caught of the weight of from four to eight pounds. They live at the bottom of the sea, feeding on little crabs, worms, and young fry, particularly of sprats and herrings; which therefore are the usual baits. They are caught usually with a ground line, sixty-four fathoms long, with from a hundred to two hundred hooks. One vessel throws out about twenty of these lines, armed with four thousand hooks, and they need only lie about two or three hours. The greatest fishery for Whittings is carried on by the French from December to February; by the English and Dutch in the spring. They appear in such quantities on our coasts, as to form shoals of three miles long and a mile and a half wide; and, as they are caught in too great numbers to be eaten fresh they salt them, by which however they lose the delicacy of their taste, and are then called buckthorn; they are often used in this state as ships' stores. As they eagerly pursue the herrings, they are often taken in the same nets; and are in greatest perfection at

this time, because they are fattened by feeding on the young herrings. In October the roes and ovaries begin to swell; and they continue spawning from the end of December till the beginning of February; and about that time they become soft, lean, and insipid to the taste. They are pursued by all the rapacious tribes that inhabit the sea; yet they multiply fast.

### THE PIKE.



THE Pike is to be found in most of the lakes of Europe and the north of Asia, and also in many of the larger rivers of Lapland, Siberia, and the adjacent countries. In the northern regions it grows to a very considerable size; four or five feet in length not being an uncommon size, and some having been taken of the length of eight feet or more.

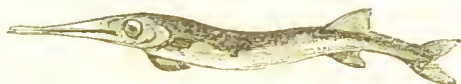
The head of the Pike is very flat, the eyes are small and of a gold tinge; the upper jaw is broad and shorter than the lower, which turns up a little at the end, and is marked with minute punctures; the teeth are very sharp, disposed not only in the point of the upper jaw, but in both sides of the lower, in the roof of the mouth, and it has often three rows upon the tongue, and even down to the orifice of the stomach; the gape of the jaws is wide, although loosely

connected; they have on each side an additional bone like the jaw of a viper, which renders them capable of greater distention when the prey is swallowed; the body is long, the back broad and almost square when in its best state; the belly is always white. When in high season their colours are very fine, being green, spotted with bright yellow, and the gills are of a most vivid red; out of season the green assumes a gray appearance, and the yellow spots turn pale. The dorsal fin is placed low on the back.

The Pike has been poetically styled the wolf of fishes, and tyrant of the watery plain; and, in fact, in proportion to his strength and celerity, he is the most active and voracious of the fresh water fish. He will attack every fish less than himself, and is sometimes seen choked by attempting to swallow such as are too large a morsel. It is immaterial of what species the animal it pursues appears to be, whether of another or its own; all are indiscriminately devoured; so that every fish owes its safety to its minuteness, its celerity, or its courage: nor does the Pike confine itself to feed on fish and frogs, it will draw down the water rats and the young ducks as they are swimming about, and even attack the legs of persons who are bathing. "I have been assured (says Walton) by my friend Mr. Seagrave, who keeps tame otters, that he has known a Pike, in extreme hunger, fight with one of his otters for a carp that the otter had caught, and was then bringing out of the water."

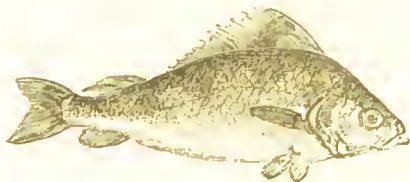
These fish afford the angler good sport, being bold biters. For trolling, the rod should be twelve or fourteen feet long. The best baits are gudgeons or dace of a middling size; the bait should never be thrown too far. Pike are to be allured by a large bait, but a small one is more certain to take them. They spawn in March and April.

## THE GAR-FISH.



THOUGH differing in shape, this fish, which is also called the Sea Needle, belongs to the pike tribe. It is a sea fish, and is vulgarly supposed to precede and pilot the phalauxes of mackerel through the regions of the deep. It grows from the length of eighteen inches to eight feet. The snout is long and projecting, and the under jaw extends further than the upper, and both jaws are armed with numbers of short and slender teeth. The back is a fine green, beneath which appears a rich changeable blue and purple; the sides and belly are of a fine silvery hue. It resembles the mackerel in taste; but many people have a prejudice against it, because the bone becomes of a fine grass green when boiled.

## THE PERCH.



THIS fish seldom grows to any great size; the largest of which we have any account is said to have weighed nine pounds. The body is deep, the scales rough, the back arched, and the side lines placed near the back.

For beauty of colour, the Perch nearly equals the gaudiest of the inhabitants of the pools, lakes, and rivers; the back glows with the deep reflections of the brightest emerald, divided by five broad stripes: the belly imitates the tints of the opal and mother of pearl, and the ruby hues of the fins complete an assemblage of colours most harmonious and elegant. It is a gregarious fish, and is caught in many of the rivers of this island; the flesh is firm, delicate, and much esteemed. They are generally boiled in wine or vinegar, which adds a considerable solidity and flavour to the flesh.

These animals are remarkably tenacious of life; and some of them, particularly the River Perch, have been carried sixty miles among straw, and have survived the journey. From the ease with which this fish is taken and transported, it has become the most common inhabitant of our fishponds.

### THE HERRING.

THE common Herring is distinguished from the other fish of the same tribe, by the projection of the lower jaw, which is curved, and by having seventeen rays in the ventral fin. The head and mouth are small, the tongue short, pointed, and armed with teeth; the covert of the gills generally have a violet or red spot, that disappears soon after the death of the fish, which survives a very short time, when taken out of its natural element.

Herrings breed in the inaccessible seas of high northern latitudes. Hence they issue in multitudes as countless as the sands of the sea. On commencing their emigration the swarms divide into distinct columns, each five or six miles in length, and three or four in breadth. Their course is made visible to an observer by the ripple which they cause in the

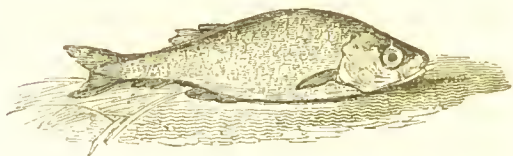
water. They reach the Shetland Islands in June, separate, surround the British Isles, and unite again at the Land's End in September. They then continue their progress to the American shore, every bay, river, and creek of which they fill. Having spawned there, the old fish proceed to Newfoundland, whence they finally return to their polar habitations. During their protracted voyage they are closely pursued by numerous marine enemies, and by flocks of sea-fowl.

The principal of the British Herring fisheries are off the Scotch and Norfolk coasts; and in our seas the fishing is always carried on by nets stretched in the water, one side of which is kept from sinking, by means of buoys fixed to them at proper distances; and, as the weight of the net makes the side sink to which no buoys are fixed, it is suffered to hang in a perpendicular position like a screen: and the fish, when they endeavour to pass through it, are entangled in its meshes, from which they cannot disengage themselves. There they remain till the net is hauled in, and they are shaken or picked out. The nets are never stretched to catch Herrings but during the night, for in the dark they are to be taken in much the greatest abundance.

After the nets are hauled, the fish are thrown upon the deck of the vessel, and each of the crew has a certain task assigned to him. One part is employed in opening and gutting them, another in salting, and a third in packing them in the barrels in layers of salt. The Red Herrings lie twenty-four hours in the brine; they are then taken out, strung by the gills on little wooden spits, and hung in a chimney formed to receive them; after which a fire of brushwood, which yields much smoke, but no flame, is kindled under them, and they remain there till sufficiently smoked and dried, when they are put into barrels for carriage.

Herrings become very soon tainted after they are dead ; in summer they are sensibly worse for being out of the water only a few hours ; and if exposed only a few minutes to the rays of the sun, they are quite useless, and will not take the salt.

### THE SPRAT.



THE Sprat is a native of the European seas, greatly resembling the herring, though a good deal smaller, and having thirteen rays in the back fin. They are caught in the Thames from the beginning of November till March, and afford a very seasonable relief to the poor of the metropolis. In the Mediterranean there are such swarms of them that forty or fifty barrels will often be taken in one haul of a large net.

Sprats are sometimes pickled, and rendered in flavour scarcely inferior to anchovies, from which they are only to be distinguished by their bones being indissoluble.

### THE ANCHOVY.

THE Anchovy is about three inches long, though mention is made of some being six inches and a half. The nose is pointed ; the edge of the jaws finely serrated, the upper being longer than the under ; the eyes large ; the body round and slender ; the back of a dusky green colour ; the sides and belly of a silvery white ;

between the ventral fins it has a long pointed scale, and the tail is forked.

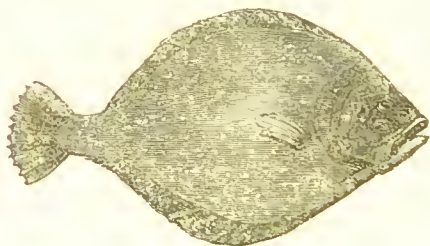
At different seasons it frequents the Atlantic ocean and the Mediterranean sea, passing through the Straits of Gibraltar towards the Levant in the months of May, June, and July. The greatest fishery is at Gorgona, a small isle west of Leghorn, where they are taken at night in nets, into which they are allured by lights fixed to the stern of the vessels. When cured, their heads are cut off, their gall and entrails taken out, then salted and packed in barrels. It scarce needs to be mentioned, that being put on the fire, they dissolve in almost any liquor. They are well tasted when fresh. But it has been found by experience, that Anchovies taken thus by torchlight, are neither so good, so firm, nor so proper for keeping, as those which are taken otherwise. From December to March, vast numbers are caught on the shores of Provence and Catalonia, and during June and July in the English channel, and in the environs of Bayonne, Venice, Rome, and Genoa. From the Anchovy the ancients prepared one of the liquids called *garum*, which was in high repute among epicures.

### THE WHITE BAIT.

THIS fish has a great similarity to the bleak, and during the month of June, appears in the Thames, near Blackwall and Greenwich. The usual length of this small species is two inches; the dorsal fin is placed near the head, so that, when suspended by it, the tail sinks down; the tail is forked and black on the tips. These small fry are usually caught for the purpose of bait for other fish. When fried with flour, they are reckoned a delicious viand by the metropolitan epicures, who frequent the taverns contiguous to the places where they are taken.

Naturalists were long undetermined to what particular fish this belongs, though all agreed it is the young of some fish that resort here. Some have ascribed its origin to the sprat, the smelt, and the bleak. These fish, however, are all found in other streams, while the White Bait is peculiar to the river Thames. Pennant is of opinion that it is of the carp kind, though he is unable to ascertain the species. Mr. Donovan, however, seems to have proved satisfactorily that it is the fry of the shad, in which case it belongs to the genus *Clupea*, and we have, therefore, placed it with the herring and other fish of that genus.

### THE TURBOT.



THE Turbot, like some others of the flat fish, grows to a great size. It has occasionally been known to weigh from twenty-five to thirty pounds. In its general form it is somewhat square. Flat fish swim sideways, on which account they are styled *pleuronectes* by Linnaeus. The eyes of all of them are situated on one side of the head, those of the Turbot on the left, and it is a curious circumstance, that while the under parts of their body are of a brilliant white, the upper parts are so coloured and speckled, as, when they are half immersed in the sand or mud, to render them

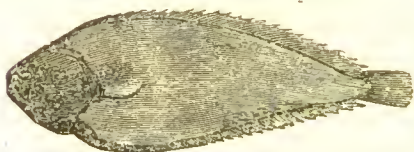
imperceptible. Of this resemblance they are so conscious, that whenever they find themselves in danger, they sink into the mud, and continue perfectly motionless. This is a circumstance so well known to fishermen, that within their palings on the strand they are often under the necessity of tracing furrows with a kind of iron sickle, to detect by the touch what they are not otherwise able to distinguish. But the Turbot does not thus hide itself for security alone. It resorts to this stratagem as an ambush for obtaining its prey, whence it pounces forth on the smaller kinds of fish that incautiously approach it.

The finest Turbot in the world are found off the northern shore of England, and some parts of the Dutch coast. The manner of fishing for them off the Yorkshire coast is as follows: three men go out in each of the boats, each man provided with three lines; every one of which is furnished with two hundred and eighty hooks, placed exactly six feet two inches asunder. These are coiled on an oblong piece of wickerwork, with the hooks baited, and placed very regularly in the centre of the coil. When they are used, the nine are generally fastened together so as to form one line with above two thousand hooks, and extending near three miles in length. This is always laid across the current. An anchor and buoy are fixed at the end of each man's line. The boats for this purpose are each about a ton burthen; somewhat more than twenty feet in length, and about five feet in width. They are well constructed for encountering a boisterous sea, and have three pair of oars, and a sail, to be used as occasion requires.

The general bait used for taking Turbots is fresh herring cut into proper sized pieces, at which they bite most readily; they are also partial to the smaller lampreys, pieces of haddocks, sand-worms, muscles, and limpets; and when none of these are to be had, the fishermen use bullock's liver. They are so extremely

delicate in the choice of their baits, as not to touch a piece of herring or haddock that has been twelve hours out of the sea; nor will they touch any bait that has been bitten by another fish.

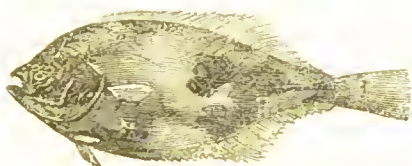
### THE SOLE.



THIS well known and delicious fish is remarkable for one very extraordinary circumstance; among various other marine productions, they have been known to feed on shell fish, although they are furnished with no apparatus whatever in their mouth for reducing them to a state calculated for digestion. The stomach, however, has a dissolving power, which makes up for the want of a masticating apparatus. But the most usual food for Soles is the spawn and young of other fish.

These fish are found on all the British coasts; but those off the western shores are much superior in size to what are taken in the north, since they are sometimes found of the weight of six or seven pounds. The principal fishery for them is in Torbay. In the winter they usually retire into deep water; but frequent the seashores, and the mouths of rivers, at the approach of spring. On the sand banks out at sea, they are caught in trawl nets, and on the shore they are taken in seine nets. The Sole will keep longer sweet out of water than almost any other fish, and is even much better for being kept awhile.

## THE FLOUNDER.



THE Flounder bears a close resemblance to the plaice, from which it principally differs in wanting the row of six tubercles behind the left eye, which distinguishes the latter. It is also a little longer in the body, and when full grown somewhat thicker. It is found in great abundance in most of the European seas, and ascends the rivers, even beyond the influence of the tide. The best season for Flounders is from the spring to the autumn, and those which inhabit fresh water are usually considered as the best.

## THE BOW BANDED CHEETODON.



THE head of this curious fish is large; the eyes are small and placed near the top; the pupil is black, the

iris gold yellow. The aperture of the gills is wide, and at the covert there is a spine. The lateral line is made up of white dots. The ground colour is brown, which towards the back inclines to black ; and looks as if covered with velvet, and inlaid with ivory. The tail is not divided. This species inhabits the coasts of Brazil, and other parts of South America ; and grows from three to six inches in length.

In winter or the rainy seasons, they lie in deep holes near the shore, which they quit in spring to come into the shallows near the land : during the summer, when the sun in those climates blazes the whole day with irresistible fierceness, they keep at the depth of twenty or thirty yards, which protects them from its intense heats. They spawn in the coldest time of the year : and being a lively fish, great numbers of the young fry are caught for the sake of being kept in vases, but in which they seldom come to maturity, and never increase.

### THE BEAKED CHLETODON.

THIS fish, which is by far the most curious of the tribe to which it belongs, frequents the shores and mouths of rivers in India, and about the Indian islands. Its length is somewhat more than six inches, and its colour is whitish, or very pale brown, with commonly four or five black bands running across the body, which is ovate and compressed. The dorsal and anal fins are very large, and on the former there is an eyelike spot of considerable magnitude. The snout is lengthened and cylindrical, and is the instrument by means of which the animal obtains its subsistence. Flies and other small insects that hover over the water constitute the principal food of this fish. When it sees a fly on a plant it slowly and cautiously approaches, as perpendicularly as possible under the

object, puts its body in an oblique direction, with its mouth and eyes near the surface, fixes the latter on the insect, remains for a moment motionless, and then, without showing its mouth above the surface, darts a drop of water from its tubular snout. So dexterously does it take aim, that, at the distance of four, five, or six feet, it scarcely ever fails to bring the fly into the water. From this circumstance it derives the name which some naturalists give to it, of the *Jaculator*, or *Shooting Fish*.

### THE FLYING SCORPION.



THIS fish has a truncated head, which is broad in front, compressed at the sides, and furnished with pretty large spines and fringed barbles; the longest of which are over the eyes, and the broadest near the corners of the mouth. On the body and head are several brown stripes, with yellow and white streaks alternately shining between. The mouth is large; the jaws are of equal length, and armed with a great number of little sharp teeth. The tongue is loose, thin, and pointed at the end; the lips are also moveable; the upper lip is composed of two bones, which form a furrow in the middle where they join. The

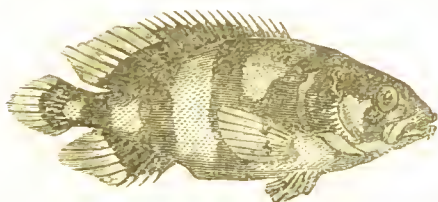
nostrils are single, and lie midway between the mouth and eyes. The eyes have a black pupil, and a white iris with blue and black rays. The gill covert terminates in a sharp angle, and is furnished with very minute scales; the aperture is wide, and the bronchial membrane is in great part naked. The scales on the body are small, and lie one over the other like tiles on a house. The lateral line consists of little risings and white points. The rays of the pectoral fins are simple, and the membrane has a violet ground with white dots. These large fins probably enable the fish to dart out of the water when pursued by an enemy. The first twelve rays of the dorsal fin are spiny, spotted brown and yellow; united below by a dark brown membrane, and at liberty above; the last twelve rays, as well as those of the anal and tail fins, are divided at the ends, and spotted black and yellow. The ventral fins are violet, with white dots; the first ray is hard. The skin is like parchment.

This variegated fish is found in the rivers at Amboyna and Japan; but even there it is uncommon. It is known also at Tranquebar. The flesh is white, firm, and well tasted, like our perch, but the fish does not grow so large. It is of the voracious kind, feeding on the young of other species; entire fishes of two inches and a half long have been found in the stomach.

### THE SEA SCORPION.

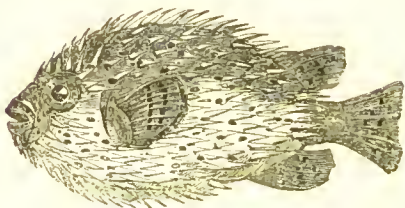
THIS animal, which belongs to the Bull-head genus, bears also the name of Father Lasher. It is about eight or nine inches in length; and its nose, the top of its head, and its back fins, are armed with strong sharp spines. In the Newfoundland seas it is extremely common, and in Greenland it forms a principal article of food. Our Miller's Thumb, or River Bull-head, is of the same genus.

## THE LANCEOLATED HOLOCENTER.



THE Lanceolated Holocenter has a large head, with a mouth in proportion; the bones of the lips are broad; the jaws are of equal length, and armed with several rows of little sharp teeth; as is the palate; but the tongue is smooth and moveable. The nostrils are double, the hinder pair near the eyes. Hereabout begin the scales, which are small, tender, and smooth. The pupil of the eye is black, the iris blue. The front operculum is made of two small rounded plates, of which the hinder one is strongly serrated. The gills have a wide aperture, and one half of the membrane is concealed. The body is broad, the belly prominent, and the anus in the middle of the body. The colour of the fish is silvery with transverse stripes and spots of brown. The soft rays of the fins are mostly divided into four branches. This species is produced in the East Indies, and takes its name from the shape of the fins. In the Indian ocean, and on the coasts of Africa and America there are found several other varieties of the Holocenter, which are remarkable for the brightness of their colours. The structure of their mouths proves them to be carnivorous. They mostly prey on crabs and young fish, which they swallow whole. Their flesh is much esteemed by the natives, it being pleasant and wholesome food.

## THE SEA PORCUPINE.



THIS fish, which takes its name from its being armed with spines, varies in dimensions from the size of a football to that of a bushel. When it is enraged it can blow up its body as round as a bladder, by means of a sort of air bag in its interior. In addition to the spines, which are longer on the sides than on the back and belly, some species have a sort of bony covering on the head. The head is small; the eyes are large, with a black pupil and yellow iris; and the nostrils are near the eyes. The aperture of the gills is crescent-shaped, and close to the pectoral fin. The back is of a bluish colour, the sides and belly are white. The fins are all short, with black spots and branched rays; and the body is covered with light and dark brown spots.

This species is found not only in America, but in the Red Sea, and near the shores of Japan. At New York, where it appears only in the summer months, it goes by the name of goad-fish; and the natives catch them merely for amusement. They throw in a line baited with the tail of a sea-crab; the fish approaches, but, being afraid of the line, he makes several turns and trials round the bait, and at length nibbles at it, but pretends to reject it, and passes by, striking it with his tail, as if he did not regard it.

But if the rod be kept steady, he presently turns back, seizes the bait, and swallows hook and all. When he finds himself taken, he becomes enraged, bristles up his spines, swells out his belly, and endeavours to wound every thing that is near him. Finding this of no avail, he resorts to cunning, and seems to submit: he lowers his spines, contracts his body, and lies like a wet glove. But this artifice not succeeding, and perceiving the fisherman dragging him towards the land, he renews his defensive attitude with redoubled fury. His spines are now vigorously erected, his form rounded, and his body so completely armed at all points, that it is impossible to take it by the hand; he is therefore dragged to some distance, where he struggles and quickly dies. Much cannot be said in favour of an amusement which is pursued for the sole purpose of contemplating the dying struggles of an unoffending creature.

### THE SPOTTED TOAD FISH.



THE head of this fish is small, and the lower jaw protrudes beyond the upper, both of which are furnished with very small teeth like a file; in the middle there is a small cartilage, which serves instead of a tongue;

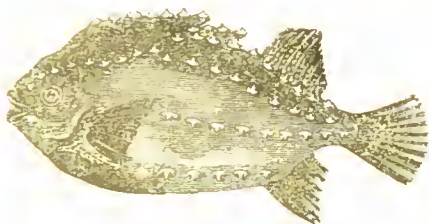
the lips and indeed many other parts of the body send out barbles. The body is laterally compressed, and beset with crooked spines. The head and back are broad in front, but go tapering towards the tail; the belly is thick and swelling out. From the upper lip shoots out an elastic barble, at the end of which are two long fleshy substances which seem as if formed for holding prey; behind this barble is another and stronger fleshy ray, and between that and the dorsal fin another still thicker; both are fastened to the back by a skin; these instruments help this clumsy slow swimming animal in catching its prey. The nostrils are near the mouth, and the eyes are round: they have a black pupil, and the iris is yellow striped with brown.

This fish is yellow on the sides and back, brown on the belly. The body and fins are varied with stripes and spots of brown colour, and of different shapes; the stripes are broad in some subjects, in others only strokes; some have white spots, others brown edged with white. The pectoral and ventral fins give this animal the look of a quadruped, but the other fins show it to be a fish. It has no lateral line, any more than the rest of the genus. The skin on the belly is thin, and only fastened to the flesh here and there by little bandages.

This fish is found in Brazil and China; it generally keeps at the bottom of the water among seaweed, or between stones.

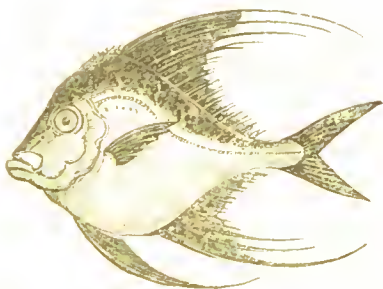
The names of the Angler, and the Fishing Frog, are also given to this fish. The fishermen have a great regard for this uncouth looking creature, because it is an enemy of the dog-fish, and, therefore, whenever they chance to take it, they always set it at liberty.

## THE LUMP FISH.



THE Lump Fish, or Sea Owl, is remarkable for its big belly, which is swelled out by a large double urinary bladder. The mouth is in the upper part of the head, and very wide; the teeth are numerous, but stand without order. The gill-coverts are fastened to the aperture almost all round. The skin is covered with a thick mucus, and all its parts are flabby and loose. The upper surface is mostly of an olive colour.

## THE SEA COCK.



THIS fish has a very thin body, which is of a silver colour, inclining to red, and without visible scales.

The head is large, very much shelving; the mouth large; the jaws are furnished with very small teeth, and the upper lip with two large bones. The nostrils are double, and near the eyes, which are round and large; the pupil is black, the iris brown inclining to a silver gray. The opening of the gills is large; the covert is long, consisting of one plate, under which the membrane is hid. The lateral line is crooked at its origin; the anus is not far from the ventral fins. All the fins are of a bright green colour; in the dorsal fin, the nine first rays are short and hard, the next four long and soft, and both are single; the pectoral, ventral, and tail fins are branched.

This fish lives in all climates; it being found, according to different authors, at Brazil, Jamaica, the Antilles, the East Indies, and Malta. It grows from six to nine inches in length, is well tasted, and lives upon worms, insects, and other little marine animals.

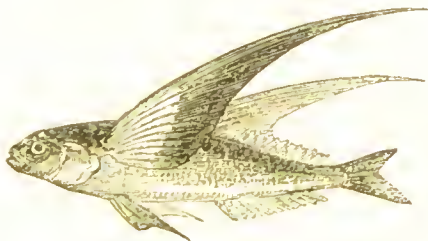
### THE RIBBON FISH.

THE head of this fish is broadest at top; the mouth large, opening obliquely; the under jaw is the longest, and both are armed with sharp teeth, one row in the upper, two in the lower. The tongue is thin, broad, and rough. The eyes are large, standing at the top of the head; the pupil is black, the iris silver mixed with blue; there is a round hole in the inner edge of each eye. The aperture of the gills is wide; the covert single; before the aperture are five minute holes, and several of the same kind near the eye, which probably secrete a viscous or slimy matter. This fish has an extremely slender and tapering shape; the body which is of a silvery colour, and semi-transparent, being twelve inches in length, and scarcely one in thickness. The pectoral fins are small, and their rays so slender, that they are almost impercep-

tible. About an inch behind the head, rises the dorsal fin, which is continued till it joins the tail, where it meets the anal fin, which begins so near the throat that the anus is situated immediately below the angle of the lower jaw. The fins display a great brilliancy of colour, being of a most beautiful red, with five spots of a deeper or brighter cast, placed on each side of the body. The tail is wedge-shaped. The head is of a silver colour mingled with red, the back is gray, and the sides and belly are silvery.

This fish is found in the Mediterranean. It is sold in the markets of Rome; but its flesh, being of an indifferent quality, and very lean, is mostly used for bait. It haunts marshy places near the shores; lives on young crabs and other small shell-fish; and may be caught with a line baited with a worm or the shell of a crab.

### THE FLYING FISH.



THE Flying Fish, with the exception of its head and flat back, has, in the form of its body, a great resemblance to the mullet. It is generally nine inches long, and full four round at the thickest part. The skin is uncommonly firm, and the scales are large and silvery. The pectoral fins are very long; and the dorsal fin is small, and placed near the tail, which is

forked. The eye, in consequence of the largeness of the head, is admirably situated for discovering danger or prey; and when pushed out of the socket, which the fish can do considerably, its sphere of vision is greatly increased.

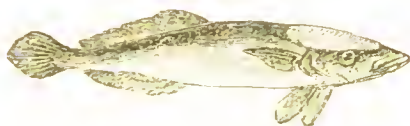
The Flying Fish inhabits the European, American, and Red Seas; but is chiefly found within the tropics. The wings, with which they have the power of raising themselves into the air, are merely large pectoral fins, composed of seven or eight ribs, or rays, connected by a flexible, transparent, and glutinous membrane. They have their origin near the gills, and are capable of considerable motion backwards and forwards. These fins are used also to aid the motion of the fish in the water; and if we are to judge from the great length and surface of the oars, comparatively with the size of the body, this fish must be able to cut its way through the water with great velocity.

In flying, as it is termed, not only the wings and fins of these fish are much expanded, but also their tails; they skim along the surface of the deep, somewhat in the manner of a swallow, but in straight lines; and from the blackness of their backs, the whiteness of their bellies, and forked expanded tails, they have much the same appearance. They fly sixty or seventy yards at one stretch; and repeat the exertion again and again by a momentary touch on the surface of the water, which gives them vigour for a new departure. Whole shoals of them sometimes fall on board ships in the warmer climates.

It has been inconsiderately remarked, that all animated nature seems combined against this little fish, which possesses the double powers of swimming and flying only to subject it to greater dangers. If it escape its enemies of the deep, it is only to be devoured by the sea-fowl, which are waiting its appearance in the air. Its destiny is, however, by no means peculiarly severe: we should consider that, as a fish,

it often escapes the attack of birds; and, in its winged character, the individuals often throw themselves out of the power of the aquatic race. The dorado, the thunny, and many others are its marine enemies; and when it raises itself into the air, it is often pursued by the albatross or tropic birds.

### THE REMORA, OR SUCKING FISH.



THERE are only three known species of the Sucking Fish; these are occasionally seen in the Mediterranean sea and the Pacific ocean. The common Sucking Fish, which inhabits most parts of the ocean, is usually about a foot in length; the head large, equal in bigness to the body, which grows smaller gradually to the tail.

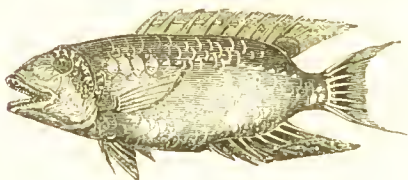
The back is convex and black, and the belly white. It has six fins, two growing from behind the gills, two more under the throat, a long one on the back, and opposite to it, under the belly, another of the same form and size; the tail is wedge-shaped.

What this fish has peculiar to itself is, that the crown of the head is flat, and of an oval form, with a ridge, or rising, running lengthways; and crossways to this, sixteen ridges, with hollow furrows between, by which structure it can fix to any animal or other substance, as they are often found adhering to the sides of ships, and the bodies of sharks and other large fish. This adhesive quality gave rise to an absurd belief among the ancients, that the possessor of it had the power of arresting the progress of a ship in

its fastest sailing. The Indians of Cuba and Jamaica formerly used to turn this quality to account by keeping tame Remoras, with which they fished. The Remora was secured by a slender but strong line, to which was attached a buoy, and was thrown into the water, upon which it would immediately pursue and fasten upon any fish that it perceived.

Sucking Fish are often eaten, and much admired: in taste they are said to resemble fried artichokes.

### THE STREAKED GILTHEAD.



THE head of this fish is compressed, and without scales as far as the eyes: the mouth is large: the jaws are of equal length, having two strong canine teeth in front of each; the back teeth are flat, resembling the grinders of quadrupeds; the palate and tongue are smooth. The nostrils are single, and near the eyes; these last are small, with a black pupil in a blue iris. The aperture of the gills is wide, and the membrane mostly uncovered. The body is of a yellow colour, with six or seven brown transverse stripes. The scales are broad, thin, smooth, and extend over part of the anal, tail, and dorsal fins. The lateral line goes straight along the back to the end of the dorsal fin; it begins again about the middle of the tail, and is lost in the fin. This fish is found on the shores of Japan, and the Red Sea.

## THE FOUR-EYED LOACH.



THE head of this species is foreshortened and broader than it is high. The lower jaw is the longest, and it lengthens downwards, and not in front, like other fish. Both jaws, as well as the palate and tongue, are armed with teeth; the barbles arise from the corners or extremities of the upper lip. The nostrils are single, and near the mouth. The eyes are very remarkable: each containing two parts or a double pupil, which has caused it to be called four eyes. The cavity of the eyes differs from other fish: this cavity is not a cylinder, as in other animals, but a part of one only; on each side at the top of the head there is an arched thin bone advancing towards the skull; these bones face each other with their concave surfaces; the eye is cylindrical, and is fixed in this cavity, but rises above it: the pupil is seen above the surface, enclosed in a black iris; as the corner is equally luminous in the internal part, the pupil is seen double. The gill covers are smooth and slippery; the body upwards is broader than it is thick; but towards the tail it takes a rounded form. The sides are ornamented with five longitudinal dark brown stripes, which run quite to the tail, where the two outermost are connected by a transverse stripe, and the three middlemost by another. The lateral line is scarcely visible; the anus is nearer to the tail than to the head. The dorsal fin is small, and near the tail. All the fins, except the ventrals, are covered mostly with

small scales; but on the body the scales are larger. It produces its young alive.

This singular fish is found in the rivers of Surinam, near the seacoast. It multiplies fast, and is esteemed by the inhabitants as good food; it grows from six to ten inches in length. Linnæus refers it to the loche genus, from which, however, it differs so much that Bloch makes a new genus of it, under the name of *Anableps*.

### THE TRUMPET FISH.



THIS fish, which belongs to the genus *Centriseus*, is also called the Bellows Fish. Its body is short and broad, laterally compressed, and very much resembles a pair of bellows in shape; it is of a pale red colour. The head which is broadish above, ends in a bent cylinder below; and the aperture of the mouth, which is small, is at the end of the long beak; the aperture is closed by the lower jaw, which shuts into the upper like the lid of a snuff-box. The nostrils are double, and lie near the eyes; the eyes are large, with a black pupil and a pale red iris. The gill-covert is single: the aperture is large, and covers the membrane which lies underneath. This fish can hide its small ventral fins in a furrow which lies behind them: all the fins are of a gray colour. The body is scaly and rough. This fish haunts the Mediterranean sea; but is often found in the ocean, whither, however, it seems to be driven by tempests, as it is never seen there but in stormy weather. It is tender, well tasted, and easy

of digestion; but, being very thin, it is generally sold with other small fish at a low price. As the fins are very small in proportion to the other parts, so that it cannot swim fast enough to avoid its enemies, Providence has given it a moveable serrated spine for its defence, which is the first ray in the dorsal fin; with this it will successfully defend itself against almost any fish, unless taken by surprise. The name of the Trumpet Fish was given to it by mariners, in consequence of its breathing the water out of its snout with a sounding noise.

### THE TOBACCO-PIPE FISH.

THIS species is known in the seas of America and Japan. The head is very long, quadrangular, and adorned with rays. The aperture of the mouth is wide, and in an oblique direction; the lower jaw is somewhat longer than the upper; the teeth are small; the tongue moveable; the nostrils double, and near the eyes, which are large, with a black pupil and silvery iris. The body is devoid of visible scales, flat in the front part, and rounded towards the tail. The lateral line has a straight direction. The anus is much nearer the tail fin than the head; the belly is long; the fins are short and of a pale red, the rays mostly four-branched. This fish is brown, spotted with blue on the back and sides, and the belly is silvery.

Its usual length appears to be from twelve to eighteen inches, exclusive of the bristle-formed process; which is usually one fourth as long as the body, but it is said to grow sometimes to between three and four feet. In some instances it has been found with two filiform appendages. It lives on small fry and lobsters; it is very plentiful, but lean, and is therefore only eaten by the poor.

## THE COMMON EEL.



THIS fish, which is viviparous, evidently forms a connecting link, in the chain of nature, between the serpents and fish, possessing not only, in a great measure, the serpent form, but also many of their habits. It is frequently known to quit its element, and to wander, in the evening or night, over meadows in search of snails and other prey, or to other ponds for change of habitation. This will account for Eels being found in waters that have not been in the least suspected to contain them. The usual haunts of Eels are in mud, among weeds, under roots or stumps of trees, or in holes in the banks or the bottom of rivers. They are partial to still water, and particularly to such as is muddy at the bottom.

Eels are best in season from May to July, but may be caught with a line till September. When the water is thick with rains, they may be fished for during the whole day; but the largest and best are caught by night lines. The baits generally used are wasp-grubs, dew worms, minnows, and gudgeons.

The Common Eel seldom exceeds a foot in length. The head is compressed, and narrower than the body; the upper jaw is narrower than the under, and the body is cylindrical, with scales hardly perceptible.

The CONGER EEL is one of the largest of the Eel tribe. It has been known to measure more than ten feet in length; and its fierceness is equal to its magnitude, many instances having occurred in which it has fought furiously with the fishermen who have caught it. In April, 1808, one was taken at Yarmouth, which knocked down its captor before it could be secured.

### THE NETTED EEL.

THE head and mouth of this beautiful species is small, without barbels. The eyes are near the upper lip, of a blue and white colour. The teeth stand apart from each other, and those in front are the longest. The body is variegated with black and white spots like net work, and the dorsal fin extends the whole length of the back.

This species is from two to three feet in length, and was found near the coast of Tranquebar; but little is known of its natural history.

### THE CORDATED EEL.

THIS fish is a native of the West Indian seas; its whole length is about thirty-two inches, of which the process at the end of the tail measures twenty-two; the body is of a rich silvery line, the flexible part belonging to the snout brown, the fins and caudal process a paler brown. The snout is connected to the back part of the head by a flexible leathery duplicature, which permits it to be extended so that the mouth points upwards, or to fall back so as to be received into a sort of case formed by the upper part of the head; the eyes are close to each other and elevated from the head; below the head, on each side, is a considerable compressed semicircular space, the forepart of which

is bounded by the gill-cover, which seems to consist of a moderately strong membrane; the body gradually diminishes as it approaches the tail, which terminates in a process or string of enormous length, ending in a very fine point; the pectoral fins are small, situate behind the cavity on each side the thorax, the caudal fin has five spinous rays.

### THE SAND-LAUNCE, OR SAND-EEL.

THE head of this fish is oblong, laterally compressed, and thinner than the trunk; the upper lip double; it has no teeth, but in the throat are two rugged bones, of an oblong shape, destined to retain the food. The aperture of the gills is wide, the cheeks, sides, and belly are of a silver colour; the nostrils are double, lying midway between the eyes and mouth. The eyes are small, having a black pupil within a silvery iris. The back is round, and has a furrow destined to receive the long dorsal fin. The anus is nearer the end of the tail than the head; the lateral line goes straight along the middle of the trunk; but there is another nearer the back, and still another nearer the bottom of the belly. The rays of all the fins are soft, and united by a thin membrane; they are simple in the dorsal and anal fins, and divided at the ends in the pectoral and tail, which last is bifurcated.

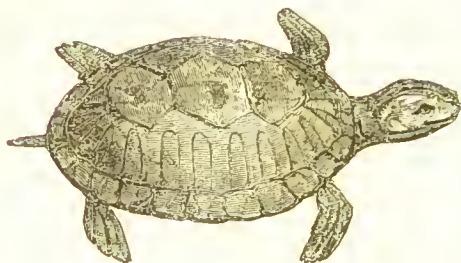
This fish is found in the North Sea and the Baltic; and is frequently dug out of the sand near the British shores. The sand is its usual dwelling, from whence it derives its name, and it lies sometimes a foot or two from the surface. It lives on water-worms, which it digs up with its sharp snout; it feeds also on the young of its own species, and some of about two inches long have been found in its stomach. It rarely comes to the surface of the water; but in fine weather it may be seen coiled up like a snake, with its

head pressed into the sand. The voracious fish are its destroyers, especially the mackerel and the porpoise. They spawn in May, laying their ova on the sands not far from the shore. They are dug out of the sands at the reflux of the tide, with hooks made on purpose; they are mostly used for bait, but are sometimes eaten. Some naturalists say they are thin and dry, and very indifferent food; while others assert that they are delicate eating. The Greenlanders eat them both fresh and dried, but more frequently bait their hooks with them. The scales of these fish are very small and thin.

### THE BUTTERFLY FISH.

THIS fish, which is a species of Blenny, has a long, large head, narrowed at the sides; and prominent eyes of considerable magnitude, with black pupil, and orange-coloured iris; the mouth is large; the jaws are of equal length, with a row of very narrow teeth standing close to each other; the tongue is broad, but short. The gills are wide, the cheeks large, and of a silver colour. The back is round, and of a dark green; the belly is short but broad. The ground colour of the fish is a dirty green, with brown spots; there are some, however, whose principal colour is a clear blue. The dorsal fin is spotted with black. This fish inhabits the Mediterranean sea: and at Marseilles, Sardinia, and Venice, is common in the markets with other small fish. It attains to the length of six or eight inches; lives near the shore, among the rocks and weeds; and feeds on crabs and small shell-fish. Its scales are hardly visible. Some naturalists describe this fish as having two dorsal fins; while others say it has but one. This contradiction must arise from these fins being sometimes united by a membrane, and sometimes not.

## THE TURTLE.



THE three principal species of the Marine Tortoise, or Turtle, are the GREEN, the LOGGERHEAD, and the IMBRICATED. Of these, the last is only useful in as far as it produces that beautiful material called Tortoise shell. The Loggerhead Turtle is a very bold and fierce animal, feeding principally on shell-fish, and which is extremely bad eating, as it is oily, rancid, tough, fibrous, and fishy. The species which is the delight of the epicure is the GREEN TURTLE. It is a native of the West Indies, and is occasionally upwards of six feet in length, and five or six hundred pounds in weight. Dampier mentions one so large that a son of Captain Roeh, a boy of ten years of age, went from the shore in the shell of it, as a boat, to his father's ship. This kind of Turtle browses on grass, seaweed, and other plants which grow on the shoals and sand banks. The female breeds about the month of April, and sometimes drops more than a hundred eggs, which she covers with sand. The Turtle is usually caught by turning it on its back, while it is asleep; in the South Seas it is taken by divers, who seize the upper shell near the tail, and hold it down till their companions take it into the boat.

## THE GREAT CUTTLE FISH.



THIS singular creature has eight arms or claws, furnished on the interior side with little round serrated cups, by the contraction of which, the animal lays fast hold of any thing that comes in its way. Besides these eight arms, it has two tentacula, four times longer than the preceding, and also pedunculated. When the suckers adhere to any thing, it is very difficult to loosen their hold. The month is situated in the centre, and is horny, and hooked like the bill of a parrot. It is so strong that the animal can break to pieces the shells of limpets and of other marine testaceous creatures on which it feeds. The eyes are below, and surrounded with several silvery rings; they are as large as the eyes of a calf, but are very prominent, and rather resemble the eyes of a crab. The body is of a reddish brown colour, nearly cylindrical. The belly below is equal, soft, smooth, oblong-round, of an ash and faintly yellowish colour; about the middle of the upper part of the body, there

is a fin like those of fishes, composed of a softish cartilaginous substance, spread out widely on both sides, and decreasing towards the tail till it ends in a point, like the broad fins of the ray-fish: by means of this fin it moves itself in swimming, having no other membrane for that purpose. From this pointed termination of the tail, the French call it the sea-spider, although it has scarcely any resemblance to the spider; but rather, with respect to the head, approaches to the shape of the star fish. At any rate they are very formidable animals. With their arms and trunks they fasten themselves, to resist the motion of the waves. The females lay their eggs upon seaweed and plants, in clusters like bunches of grapes. Immediately after they are laid they are white, and the males pass over and impregnate them with a black liquor, after which they grow larger and resemble black grapes. On opening one of the eggs, the embryo Cuttle is found alive. The noise of a Cuttle Fish, on being dragged out of the water, resembles the grunting of a boar. When the male is pursued by the sea-wolf or other ravenous fish, he shuns the danger by stratagem. He squirts out a black liquor, by which the water becomes as black as ink, and under shelter of this he baffles the pursuit of his enemy. This black liquor is elaborated in a particular gland. The Romans used it as ink; and it is said to be an ingredient in the composition of Indian ink. There is a bone in this animal which is converted into that useful article of stationery called pounce, and is also used by silversmiths to form moulds. This fish was much esteemed by the ancients, and is still eaten in the countries bordering on the Mediterranean.

In hot climates these creatures are found of an enormous size. The Indians affirm, that some have been found two fathoms broad over their centre, and each arm nine fathoms long. This species is the EIGHT-ARMED CUTTLE FISH, which has not the two

tentacula possessed by the great or Officinal Cuttle Fish. When the Indians navigate their little boats, they go in dread of them; and, lest these animals should fling their arms over and draw them under water, they never fail having an adze to cut them off. When used for food, they are served up in their own liquor, which from boiling, with the addition of nitre, becomes red. If taken into a dark apartment and cut open, it illuminates the whole place.

### THE ECHINUS, OR SEA-URCHIN.

THE species of the Sea-urchin are very numerous, and the individuals are various in shape. The great characteristic of the genus Echinus is, that the animals are of a roundish form, covered with a bony crust, beset with spines, and having the mouth beneath. The spines are the instruments of motion. The Sea-urchin is oviparous, and spawns in the spring. It lives chiefly on crabs, and other testaceous animals, marine worms, &c. Some of the species are excellent food. Most of this species of fish have a great variety of beautiful tints and curious forms, and many of them are highly valued in collections. Oppian tells us that the Sea-urchin was believed to have the power of uniting its dissevered parts.

“ Sea-urchins, who their native armour boast,  
All stuck with spikes, prefer the sandy coast.  
Should you with knives their prickly bodies wound,  
Till the crude morsels pant upon the ground;  
You may e’en then, when motion seems no more,  
Departing sense and fleeting life restore.  
If in the sea the mangled parts you cast,  
The conscious pieces to their fellows haste;  
Again they aptly join, their whole compose,  
Move as before, nor life nor vigour lose.”

## THE STAR FISH.



THERE are several varieties of this tribe. They inhabit the sea, and are generally found on the sand, or among rocks, considerably below low water mark. They are covered with a coriaceous crust, and have five or more rays proceeding from a centre, in which is situated the mouth. A prodigious number of tentacula, or short fleshy tubes, which seem at once calculated to catch prey and to anchor the animal to the rocks, proceed from each ray. The animal moves, though but slowly, by means of the undulation of its rays. The mouth is armed with long teeth, for the purpose of breaking the shells on which the animals feed. The animal breathes by means of gills. The Common, or Five-rayed Star Fish, which is the species represented in the plate, has five angular rays, with prickly protuberances at the angles. When alive it is usually of a brownish white colour. In one of these, which he kept for some time alive, Mr. Bingley observed more than four thousand tentacula, on the under sides of the rays.

## THE LOBSTER.



THE common Lobster has a smooth thorax; a short serrated snout, very long antennæ, and between them two shorter ones; bifid elaws, and large fangs, the greater of which is tuberculated, and the lesser serrated on the inner edge; four pair of legs, six joints in the tail; the tail fins rounded. The pincers of one of the Lobster's large claws are furnished with knobs, and those of the other are always serrated. With the former it keeps firm hold of the stalks of submarine plants, and with the latter it cuts and minces its food very dexterously. The knobbed, or numb elaw, as the fishermen call it, is sometimes on the right and sometimes on the left side indifferently. It is more dangerous to be seized by them with the cutting elaw than with the other; but, in either case, the quickest way to get disengaged from the creature is to pull off its claw.

Like the rest of their tribe, they annually cast their shells. Previously to their putting off the old one, they appear sick, languid, and restless. They acquire an entirely new covering in a few days; but during the time that they remain defenceless they seek some lonely place, lest they should be attacked

and devoured by such of their brethren as are not in the same weak situation. At the same time that they cast their shell they change also their stomach and intestines.

This fish is exceedingly prolific; between twelve and thirteen thousand eggs having been counted under the tail of a female Lobster. These eggs are deposited in the sand, and are soon hatched.

These animals are found on most of the rocky coasts of Great Britain. Some are caught with the hand, but the greater quantity in pots; a sort of trap formed of twigs like a wire mouse-trap, so that when the Lobster gets in, there is no return. They are baited with garbage, and fastened to a cord sunk into the sea, and their place is marked by a buoy. Lobsters were caught in such plenty on the coast of Northumberland, that about the year 1769, the sum paid for the annual exports from Newbiggen and Newton by sea, amounted to nearly fifteen hundred pounds.

### THE SOLDIER CRAB.



THE Soldier Crab, or Hermit Crab, is usually about four inches in length. On the hinder part it has no shell, but is covered as far as the tail with a rough skin, which terminates in a point. It has two hard

and strong nippers before, one of which is of the thickness of a man's thumb, and is capable of inflicting a severe wound. The tail is furnished with a hook, by which it secures itself in its lodging. They inhabit the empty cavities of turbinated shells, changing their habitation, according to their increase of growth, from the small nerite to the large whelk. Nature denies them the strong covering behind, which it has given to others of this class, and therefore directs them to take refuge in the deserted cases of other animals. They crawl very fast with the shell on their back; and, at the approach of danger, draw themselves within the shell, and, thrusting out the larger claw, will pinch very hard whatever molests them. It is very diverting to observe these animals when they have occasion to change their shell. The little soldier is seen busily parading the shore along that line of pebbles and shells which is formed by the extremest wave, still however dragging its old incommodious habitation at its tail, unwilling to part with one shell, even though a troublesome appendage, till it can find another more convenient. It is seen stopping at one shell, turning it, and passing it by; going on to another, contemplating that for awhile, and then slipping its tail from its old habitation to try on the new; this also is found to be inconvenient, and it quickly returns to its old shell again. In this manner it frequently changes, till at last it finds one light, roomy, and commodious; to this it adheres, though the shell be sometimes so large as to hide the body of the animal, claws and all. It not unfrequently happens that severe contests arise between two of these crabs for some favourite shell. When this animal is taken, it sends forth a feeble cry, endeavouring to seize the enemy with its nippers; which, if it fastens upon, it will sooner die than quit the grasp.

## THE CRAB.



THE common or black-clawed Crab has three notches on the front; five serrated teeth on each side; the claws elevated; the next joint toothed; the hind feet subulated: the colour a dirty green, but red when boiled. It inhabits all our shores, and lurks and burrows under the sand.

It changes its shell once a year, generally between Christmas and Easter, and while it is performing this operation it retires among the cavities of rocks, and under large stones. The Crab is an exceedingly quarrelsome animal, and when it has seized on its antagonist it is not easily compelled to forego its hold. In this situation, the captive has no resource but to relinquish the limb, and nature has provided it with the power of accomplishing this in a very curious manner. It stretches the claw out steady, the claw suddenly gives a gentle crack, and the wounded limb drops off, not, as we might be led to infer from reasoning, at the joint, but in the smoothest part.

## THE SHRIMP AND PRAWN.



SHRIMPS possess long slender feelers, and between them two thin projecting laminae; the claws have a single hooked moveable fang; they have three pair of legs; seven joints in the tail; the middle caudal fin subulated, and four others round and fringed; a spine on the exterior side of each of the outmost. These animals, which are of a delicate flavour, inhabit the shores of Britain in vast quantities, ascend the rivers, and even find their way into the ditches and ponds of salt marshes. Those caught in the sea are, however, much better than those of the rivers.

The Prawn is not unlike the Shrimp, but exceeds it in size, being at least three times as big; and is more pleasing in colour, it having, when boiled, the most beautiful pink tint all over its body. The flesh is better tasted than that of the Shrimp. It has a long horn in front of its head, compressed vertically, which bends somewhat upward, and is serrated both above and below. Seaweeds, and the vicinity of rocks near the shore, are the haunts of the Prawn, which, unlike the Shrimp, seldom enters the mouths of rivers. It usually swims on its back, but when in danger it throws itself on one side, and springs backward to a considerable distance.

## THE OYSTER.

THIS genus comprehends the two extensive families of Pectens or Scallops, and Oysters; and there are no less than a hundred and thirty-six species in the whole. In both divisions, the animal is well known as a nutritive and valuable food. Both Scallops and Oysters are found plentifully in the Indian seas, the Mediterranean, the American ocean, and in the European seas, where they constitute a considerable article of commerce. The Scallops produce a sort of coarse byssus: and have the agility of leaping full half a yard out of the sea, at which time they open their shells, and spout out the stale water within them; after which they rapidly sink, taking in fresh water, and closing their shells with a loud snap, which betrays their beds to the watchful fisherman.

Though, by an artificial classification, they are both included in one genus, Nature has impressed a very obvious difference in the external appearance of the Oyster and the Scallop. In their locomotive faculties there is a still stronger distinction. When the tide leaves it dry, the Scallop, by a sudden closing of its valves, assisted by the foot, has the power of springing four or five inches at a jerk, repeating this motion in order to regain its element. In the water, it is able to raise and sustain itself near the surface, turning about in various directions, and on any alarm can suddenly close the valves and sink to the bottom. The Oyster, on the contrary, is unfurnished either with a foot or with byssus; and its powers of motion consist only in turning either the flat or convex side upwards or downwards; and even to effect this, the animal is said to take advantage of the force of the ebbing or flowing of the water to assist it.

The Oyster excludes its young completely formed; and by the help of a magnifier, the joinings of the little infant shells can be distinctly seen, with all their parts, as perfect as the parent animal, though appearing to the naked eye only as a minute point.

The Oyster respire by means of gills. The water is drawn in at the mouth, which is a small opening in the upper part of the body, and proceeds thence down a long canal, constituting the base of the gills, and so out again, the animal retaining such a portion of air as is necessary for the functions of the body.

### THE COCKLE.

Of the *Cardium*, or Cockle tribe, there are more than fifty species; some or other of which are to be procured on the sandy shores of all the known seas. They are mostly found immersed a few inches deep in the sand. In size the different species vary considerably, some being five or six inches in diameter, and others not more than half an inch. The Cockle has a tolerable degree of locomotive power, in consequence of its triangular yellow foot, which is conspicuous on the shell being opened. With this foot it can also draw into threads its glutinous matter, and thus in a manner anchor itself on the spot that it has chosen for its residence. The opening of the shell is protected by a soft membrane, which wholly closes up the front, except in two places, at each of which there is a small, yellow, fringed tube. Through these tubes the animal receives and ejects the water which conveys nutriment to its body.

The *Cardium edule*, or Common Cockle, which is the species most common in this country, has a grayish shell, somewhat heart-shaped, with about twenty-eight flattish ribs, transversely striated with recurved

imbrications. It is a wholesome and pleasant food. Lobsters and crabs lie in wait for an opportunity of thrusting in a leg or a claw, when the Cockle is open, in order to prey on the included animal; but it often happens that the younger ones of those crustaceous animals, not being sufficiently hardened or matured to withstand the violent snapping of the shells of the larger species on their close, lose the limb; and herein we see the abundant wisdom and benignity of the Almighty, in having bestowed on the cancer tribe the power of renewing their members when cut off; and, but for which, the whole race would soon become extinct, since this mode of procuring their living subjects them to eternal warfare.



# NATURAL HISTORY

OF

## SERPENTS, REPTILES, ETC.

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LINNÆUS divides the Amphibia into two orders, SERPENTS and REPTILES. The Serpent tribe have neither fins, ears, nor feet, and their jaws are dilatable, and not articulated. The construction of their back bone enables them to advance with an elegant sinuous motion. It is composed of moveable articulations, and runs through the whole length of the body. Some of the species have the power of rendering their bodies perfectly stiff, which enables them to spring on their prey with great force and velocity. Most Serpents are covered with scales. The breast and abdomen are surrounded with ribs. Like quadrupeds they breathe through the mouth, by means of lungs. The head joins immediately to the body, and the jaws are so expansible that the animals can swallow prey which is thicker than

themselves. The tongue is slender and forked. They change their skin twice a year; the old skin parting near the head, and the creature creeping from it by an undulatory kind of movement. The colours of the Serpent are, in general, exceedingly varied and beautiful.

Of the whole number of Serpents the poisonous species constitute not more than one-sixth. They differ from the harmless kinds in having only two rows of true or proper teeth in the upper jaw, whilst the others have four; and in having long tubular fangs on each side of the head, the purpose of which is to convey the venom from a bag or receptacle at the base of these fangs into the wound made by their bite. A head wholly covered with small scales, and scales on the head and body furnished with a ridge or prominent middle line, are also signs, though more equivocal, than those first mentioned.

Reptiles have legs, and flat naked ears, devoid of auricles. Tortoises, Lizards, and Frogs are the principal tribes.

## THE RATTLE SNAKE.



Of the Rattle Snake, which is bred both in North and South America, but in no part of the old world, the colour is yellowish brown above, marked with broad transverse bars of black. Both the jaws are furnished with small sharp teeth, and the upper one has four large incurvated and pointed fangs. At the base of each is a round orifice, opening into a hollow that appears again near the end of the tooth in the form of a small channel; these teeth may be raised or compressed. When the animals are in the act of biting, they force the fatal juice out of a gland near the roots of the teeth. This is received into the round orifice of the teeth, conveyed through the tube into the channel, and from thence with unerring direction into the wound. The tail is furnished with a rattle, consisting of joints loosely connected; which annually increase in number till they amount to about forty. The young Snakes, or those of a year or two old, have no rattle at all.

As the tail of these Snakes, which are the most dreaded of all Serpents, keeps rattling upon the

slightest motion, passengers are thus providentially warned of their approach to them. In fine weather the notice is always given, but not always in rainy weather; this inspires the Indians with a dread of travelling among the woods in wet seasons. In addition to this circumstance, the odour of the Rattle Snake is so extremely fœtid, that when it basks in the sun, or is irritated, it is often discovered by the scent before it is either seen or heard. Horses and cattle frequently discover it by the scent, and escape at a distance; but when the Serpent happens to be to leeward of their course, they sometimes encounter its venom. It must, however, be remarked, that the Snake is not the aggressor; it being perfectly inoffensive to mankind, except when provoked. In fact, it always tries to avoid the presence of man. Instances have even been known of its being tamed, and becoming exceedingly gentle and docile.

The usual motion of the Rattle Snake is with its head to the ground. When, however, it is alarmed, it coils its body into a circle, with its head erect, and its eyes flaming in a terrific manner. But it cannot pursue rapidly, and has no power of springing on its enemy.

Rattle Snakes are viviparous, producing their young, generally about twelve in number, in the month of June, and by September these acquire the length of twelve inches. It has been well attested that they adopt the same mode of preserving their young from danger as that attributed to the common viper, receiving them into their mouth and swallowing them. It is believed by some naturalists to have the power of fascinating its prey by gazing at it, so as to render it incapable of flight, but others are doubtful as to this being a fact. The probability seems to be, that the victim is prevented from escaping merely by the extreme terror which its formidable enemy inspires.

## THE GREAT BOA.



THE Snakes of the Boa tribe are distinguished from those of other tribes by the under surface of the tail being covered with scuta or undivided plates, like those on the belly, and by having no rattle. The individuals are strong, but not venomous, never attack except openly, and from necessity, and conquer by dint of strength. Three species are found in Asia, the others belong to the warmer parts of the new continent.

The ground colour of the body of the Great Boa, which is the largest and strongest of the Serpent race, is yellowish gray, on which is distributed, along the back, a series of large, chain-like, reddish brown, and sometimes perfectly red variations, with other small and more irregular marks and spots.

The Great Boa is frequently from thirty to forty

feet in length, and of a proportionate thickness. The rapacity of these creatures is often their own destruction: for whenever they seize and swallow their prey, they seem like surfeited gluttons, unwieldy, stupid, helpless, and sleepy. They at the same time seek for some retreat, where they may lurk for several days together, and digest their meal in safety. The smallest effort will then destroy them: they scarcely can make any resistance; and, equally unqualified for flight or opposition, even the naked Indians do not fear to assail them. But it is otherwise when this sleeping interval of digestion is over; they then issue, with famished appetites, from their retreats, and with accumulated terrors, while every animal of the forest flies from their presence. One of them has been known to kill and devour a buffalo. Having darted upon the affrighted beast (says the narrator), the Serpent instantly began to wrap him round with its voluminous twistings; and at every twist the bones of the buffalo were heard to crack as loud as the report of a gun. It was in vain that the animal struggled and bellowed; its enormous enemy entwined it so closely, that at length all its bones were crushed to pieces, like those of a malefactor on the wheel, and the whole body was reduced to one uniform mass: the Serpent then untwined its folds, in order to swallow its prey at leisure. To prepare for this, and also to make it slip down the throat more smoothly, it was seen to lick the whole body over, and thus to cover it with a mucilaginous substance. It then began to swallow it, at the end that offered the least resistance; and in the act of swallowing, the throat suffered so great a dilatation, that it took in at once a substance that was thrice its own thickness. In 1799, a Malay seaman was almost instantaneously crushed to death, in the island of Celebes, by one of these Serpents, thirty feet in length, which seized him by the right wrist, and twined round his head, neck, breast, and thigh.

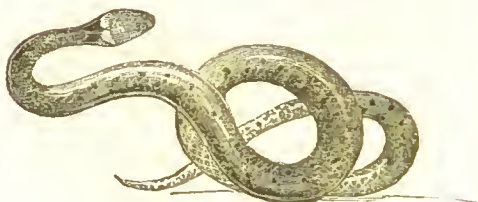
## THE SOOTY AMPHISBÆNA, OR BLIND SNAKE.



THIS species grows usually to the length of one or two feet, of which the tail never exceeds an inch, or an inch and a quarter. It is from the extremities of its body being of an equal thickness that it derives its name. The eyes are exceedingly small, and covered in such a manner by a membrane, as to be hardly perceptible; from which circumstance, it has been called the Blind Serpent. The top of the head is covered by six large scales, in three rows of two each; and the body is entirely covered with smooth scales of an almost square form, arranged in regular transverse rings. It has a hard skin of an earthy colour.

This animal is found in India, particularly the Isle of Ceylon; and likewise in South America. Its habits are in a great measure unknown; but it feeds on earthworms, beetles, and various insects; it is particularly fond of devouring ants; which in numberless legions often destroy all before them, leaving every thing desolate, as if destroyed by fire. Having the power of advancing or withdrawing itself without injury, in consequence of its structure, this Serpent is peculiarly fitted for penetrating into the subterraneous retreats of ants, worms, and other insects; and is able to dig deeper than any other Serpent, its skin being very hard, and its muscles very strong. The Amphisbæna is not venomous.

## THE COMMON ENGLISH SNAKE.



THE Ringed or Black Snake, which is the most common and the largest of the English Serpents, sometimes exceeds four feet in length. The neck is slender; the middle of the body thick; the back and sides are covered with small scales; the belly with oblong, narrow, transverse plates; the colour of the back is marked with two rows of small black spots, running from the head to the tail; the plates on the belly are dusky; the scales on the sides are of a bluish white; the teeth are small and serrated, lying on each side of the jaw in two rows. The whole species is perfectly inoffensive, taking shelter in dunghills, and among bushes in moist places, whence they seldom remove, unless in the midst of the day, in summer, when they are called out by the heat to bask themselves in the sun. If attacked, they at first endeavour to escape, but if much pressed, they begin to hiss, and put themselves in a threatening position, though incapable of doing mischief.

The Snakes in winter conceal themselves, and become nearly torpid, reappearing in spring, when they uniformly cast their skins. This is a process that they also seem to undergo in the autumn.

The female deposits her eggs in holes fronting the south, near stagnant waters; but more frequently in dunghills, in the form of a continued chain of ova, to

the number of from twelve to twenty: these are about the size of the eggs of the blackbird, of a whitish colour, and covered with a parchment-like membrane. The young ones are rolled up spirally within the middle of the fluid, which greatly resembles the white of a fowl's egg. They are not hatched till the spring following the time when they are laid.

The Snake feeds on frogs, insects, worms, and mice, and is said to be particularly fond of milk. In pursuit of its aquatic prey it goes into the water, in which it swims with great elegance.

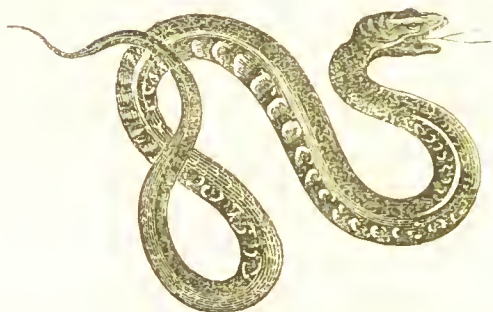
### THE ANNULATED SNAKE.



THE ground of this Snake is white, with brown transverse bars, which are straight and distinct on the back, but run into one another on the belly. The tail is slender, and has two ranges of imbricated scales on its under surface. This animal is a native of South America, and when irritated or preparing to bite, raises up the fore part of its body, and carries its head in a bending position.

Of this species there are a great number of elegant varieties, many of which are figured in the elaborate work of Seba, particularly the large Annulated Snake of Surinam.

## THE AQUATIC VIPER.

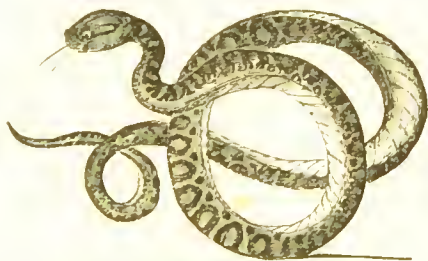


THIS species is a native of India, where it frequents wet swampy fields, and is commonly reckoned a water Snake: it is about two feet nine inches in length, and in circumference three inches and a half: the head is rather broad, somewhat depressed, and laterally compressed: its body is covered with large scales, gradually diminishing towards the tail, which is eleven inches in length, slightly carinated, tapering very gradually, and terminating sharply. The head is of a dusky hue; the rest of the animal a yellowish brown, with numerous round black spots, joined by narrow fillets regularly disposed in oblique rows, a few scales of light yellow being interspersed: the abdomen yellowish white.

A Viper of this kind was caught in the Lake of Ankapilly, in one of the traps employed for catching eels, and though several experiments were made with a stick to try to irritate it, it did not either hiss or snap; neither was it provoked to bite a chicken, though pecked several times by the animal: while it lay coiled up, a chicken properly secured was laid

upon it, but it continued quiet, without attempting to wreath round the chicken, or otherwise to annoy it; and when the bird fluttered and struggled to get loose, the Snake, as if afraid, crept away. It should be remarked, however, that in the course of this last experiment, the Viper threw up a large fish, which appeared to have been but a short time in the stomach; so that its forbearance might, in some measure, be owing to not being hungry; a circumstance that suggests caution against hasty decision. But it is certainly not venomous, and does not appear to be very irascible. It is regarded by the natives as harmless.

### THE EGYPTIAN VIPER.



This is said to be the Officinal Viper of the Egyptians, and is by some supposed to be the Asp of Cleopatra, by the bite of which that high spirited princess determined to die, rather than submit to be carried to Rome in order to grace the triumph of Augustus. It is imported in considerable quantities every year to Venice, for the use of the apothecaries in the composition of theriaca, and for other purposes. It is abundant in Egypt; and is found in other parts of Africa as well as in Asia. It is from twenty inches long, to three feet and upwards, variegated with rich

chestnut brown spots or bands, on a lighter brown ground, the scales remarkably short, close set, and hard; the eyes are vertical; the head compressed, and covered with very minute dark brown scales, and reddish stripes. It is very poisonous, but not often fatally so. The death produced by its bite is said to be speedy, but devoid of pain.

The **VARIEGATED VIPER** is so named from the mixture of colours on its body, which is mottled with white, brown, and gray; the sides and belly are pale yellow; and its form and size is much the same as the preceding. It is a native of America, but not poisonous.

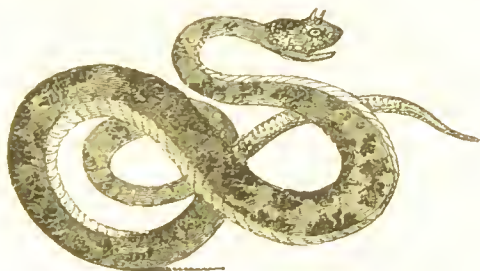
### THE INTESTINE VIPER.

THIS creature is so named from its lurking in secret and hidden places for its prey. It is a small species, inoffensive to man, and devoid of poison. It lives on insects, lizards, frogs, toads, and mice. The ground colour of its body is a reddish brown, mottled and variegated with white transverse bands, and narrow longitudinal lines on the back and sides. It is a native of Africa, and found plentifully on the coast of Guinea.

### THE WATER VIPER.

THIS animal is a native of Carolina, and, next to the rattle snake, is the largest species of Serpent in that country. It is of an ash colour, variegated with yellow spots. Unlike other Vipers, it is very active, and it catches fish with great dexterity. In summer, numbers of them are seen lying on the branches of trees, which hang over rivers, waiting to surprise birds or fish, and they often drop into boats on the heads of the men. At the end of its tail is a horny substance, concerning the fatal powers of which many absurd stories have been told.

## THE HORNED VIPER.



THE *Cerastes*, or Horned Viper, which commonly grows to the length of about a foot or fifteen inches, but sometimes more than two feet, is distinguished by a pair of horns, or curved processes, situated above the eyes, and pointing forward: these horns have nothing analogous in their structure to the horns of quadrupeds, and are by no means to be considered in the light of either offensive or defensive weapons; they are moveable, and about one-sixth of an inch long.

The head of the *Cerastes* is flattened; the muzzle thick and short; the eye yellowish green. The hind part of the head is narrower than the part of the body to which it is attached. The scales of the head are of the same size with those on the back, or only a little less; and all the scales are oval with a longitudinal ridge. The general colour of the back is yellowish, with irregular spots of different degrees of darkness, in form of transverse bands. The under surface of the body is brighter. The *Cerastes* inhabits the greatest part of the eastern continent, especially the desert sandy part of it. It abounds in the three Arabias, and in Africa. In Egypt it appears to be partially

domesticated, as it will enter the houses when the family are at table, pick up the scattered crumbs, and retire without doing injury to any one.

This animal can endure hunger and thirst much longer than most Serpents; some naturalists assert that it can exist five years without nourishment. But, though able to live long without food, these animals are extremely voracious, and attack small birds, quadrupeds, and reptiles with great eagerness. Their skin is capable of very great extension, and they can swallow food till increased to twice their ordinary size; and, as their digestion is extremely slow, they become, when gorged, quite torpid and motionless, in which situation they are very easily killed.

### THE LIFE-CONSUMING VIPER.

THIS venomous Serpent well deserves the above name; and is most deservedly dedicated to one of the fates, on account of the violent poison which distils from its murderous fangs. It is a native of the burning zone of Africa, and of the warm regions of South America; it is also found in the Island of Ceylon, and in the remote provinces of Asia. The ground colour is a silvery white, variegated with black irregular spots and blotches. The head is broad, and the mouth large and blunt; the eyes are like drops of pearl, surrounded with a green iris; the head is cordated with quadruple rows of transverse white bead-like lines, passing behind the eyes, on a black ground; the scales are varied, some large and shield-formed, others small and pointed, and all remarkably strong and close set. This is a most dangerous and formidable Serpent; its poison, though not so rapid in its effects as some, yet causes a stupefaction of the mental faculties, a wasting of the flesh by incurable consumption, and finally death.

## THE COMMON EUROPEAN VIPER.



THE Common Viper is to be met with in most countries of the ancient world. In the East Indies also it is found, and varies very slightly from that which is the native of Europe. It can equally support the vicissitudes of very cold climates, it being an inhabitant of Sweden, where its bite is nearly as dangerous as in the warmer regions of Europe, and likewise of Russia, and of several parts of Siberia, where it is very numerous, as the superstitions of the people deter them from endeavouring to destroy this noxious reptile, because that they conceive some terrible disaster will follow the attempt.

Vipers crawl slowly at all times, and in general only attack such smaller animals as are their usual food. They never willingly assail man or the larger animals, except when wounded, trampled on, or irritated, when they become furious, and are apt to bite severely. From the firmer manner in which their spine is articulated, they are unable to twist themselves round so much as most other serpents. It is only the head that they can turn with any considerable degree of agility; owing to this circumstance they are easily taken. For this purpose, some persons use a forked stick, to fix the Viper by the neck; and then seizing it by the tail,

throw it into a bag. Others, holding down its head with the end of a stick, take it fast in the left hand by the neck; and while the animal makes ineffectual efforts to defend itself, with its mouth wide open, cut out its poisonous fangs with a pair of scissars or a knife: the Viper, after this, is incapable of doing injury, and may be handled with perfect safety. The English Viper-catchers have the boldness to seize them suddenly by the neck, or even by the tail, with their hands; and holding them with a firm grasp, the animal is altogether incapable of turning itself sufficiently to bite the hand that holds it fast. Highly poisonous as the venom of the Viper is when infused into a wound, it produces no effect whatever when taken into the stomach.

The length of the Common Viper seldom exceeds two feet, though sometimes they are found above three. The ground colour of their bellies is of a dirty yellow; that of the female is deeper. The back is marked the whole length with a series of rhomboid black spots, touching each other at the point; the belly is entirely black. It is chiefly distinguished from the common ringed snake by the colour, which in the latter is more beautifully mottled, as well as by the head, which is thicker than the body; but particularly by the tail, which in the Viper, though it end in a point, does not run tapering to so great a length as in the other: when, therefore, other distinctions fail, the difference of the tail can be discerned at a single glance. These animals are found in many parts of our own island, particularly in the dry, stony, and chalky counties. It is extremely difficult to kill them. They will exist for three or four hours, or longer, in spirits of wine. yet, tobacco, and especially its essential oil, proves speedily fatal to them. The Viper is the only one of the Serpent or Reptile tribe, in Great Britain, from whose bite any evil consequences are to be apprehended. The animal is viviparous, and produces its

offspring towards the close of summer. When the young are in danger they retreat into the mouth of the mother. The Viper attains its full growth in about seven years, and is capable of supporting long abstinence. Its flesh was once in great request as a restorative, and remedy for various diseases.

### THE FATAL VIPER.

THIS animal has a short round head, and a large wide mouth, armed with four curvated teeth, two in each jaw; its eyes dart fire; and its bite inflicts cruel and inevitable death. It has also the faculty of erecting its scales at pleasure, or when irritated, and of closing them again with a rattling noise. A border of silver white scales surrounds the mouth; the tongue is fleshy and forked, which the creature can protrude to a great length when offended; at which time it also shows its teeth in a menacing posture, like a snarling dog, and thus it can show or conceal its fangs at pleasure. The scales on the upper part of the body are elegantly speckled with pale yellow, cinereous gray, black, brown, and white, glistening most superbly in the sun. It is a native of South America, and of the Island of Ceylon; it will attack man or beast with great fury, erecting its crest, and darting forward with singular rapidity and courage. The male is deeper coloured than the female, and appears to have a larger body and a more slender tail. The general length of this Snake seems to be about four or five feet, and the tail is long in proportion to the body.

### THE EGYPTIAN ASP.

THIS animal is about three feet in length; the head is rather large, and covered with small carinated scales,

the body with larger, of similar structure : the colour is pale rufous gray, and along the upper parts are three longitudinal ranges of deep rufous spots, bordered with black, and which unite or become confluent towards the tail, in such a manner as to exhibit the appearance of a zigzag band, resembling in some degree that of the common viper : the under parts of a dusky colour, marbled with dull yellow : in the structure of its fangs it resembles the viper, and is said to be equally poisonous. The nose is terminated by an erect wart-like excrescence. It preys by smell, and feeds on rats, mice, lizards, frogs, toads, &c.

### THE GREEN LIZARD.



THE colouring of this species is seen in its greatest brilliancy about the beginning of spring ; when, after having thrown off its old covering, it exposes its new skin, with all its bright enameled scales, to the genial warmth of the sun's rays, which, playing on the scales, gild them with undulating reflections. The upper parts of the body are of a beautiful green, more or less variegated with yellow, gray, brown, and even sometimes with red ; the under parts being always more of a whitish colour. The colours of this species are subject to variety, becoming pale at certain seasons of the year, and more particularly after the death of the animal. It is chiefly in the warm countries that it shines with all its superb ornaments, like gold

and precious stones. In these regions it grows to a larger size than in more temperate countries, being sometimes found thirty inches in length. The inhabitants of Africa eat the flesh of this animal. It is a gentle creature, and, if taken when young, may be rendered tame. If irritated, however, and driven to extremity, it will defend itself against a dog, and will fasten so firmly on his muzzle as to allow itself to be killed rather than forego its hold.

The Green Lizard is by no means confined to the warmest countries of both continents; it is found likewise in temperate regions, though it is there smaller and less numerous. It is not even unknown in Sweden, and in Kamtschatka; and in both countries, in spite of its beautiful appearance, it is looked on by the inhabitants with horror, from some strange superstitious prejudices. It is not an inhabitant of this country.

### THE CHAMELEON.



CHAMELEONS are found of various sizes, but are seldom above fourteen inches long, of which the tail is seven; and the length of the legs, including the toes, is about three inches. It is found in all the warm countries, both of the old and new world, in India,

and its islands, in Mexico, in Africa, and in some of the warmer parts of Spain and Portugal. The whole skin of the Chameleon is strewed over with little knobs, like shagreen; these are extremely smooth, and more remarkable on the head (which is particularly flat on the top and both sides), and are surrounded with minute, and almost imperceptible, grains. The nostrils are placed at the tip of the muzzle, which is somewhat rounded. The mouth is wide, and the bones of the jaws denticulated, so as to represent small teeth. The tongue is of a very extraordinary form; being composed of white solid flesh, about ten lines long, and three broad, round, a little flattish towards the end, hollow, and open, somewhat like the end of an elephant's trunk. With this instrument it seizes insects, on which it subsists, with wonderful quickness. Its eyes are covered with a rough membrane, which is divided by a narrow horizontal slit, through which the pupil is seen; and they have the singular faculty of looking in different directions at the same instant.

Whether climbing slowly along the branches of trees, or concealing itself below the leaves in expectation of insects, or walking deliberately on the ground, the Chameleon is always extremely ugly in its appearance, having neither agreeable proportions, nor beauty of form, nor elegant movements, to please the eye of the observer, so that no one can attempt to catch, or even to touch it, without disgust. Even its walk is disagreeable, as it has a ridiculous appearance of gravity, from the animal seeming never to lift up one foot till it is thoroughly assured of the firmness of the rest. Of the changes of colour we must now speak more particularly.

When at rest and in the shade for some time, the grains or little eminences on the skin are sometimes pale red, and the soles of the feet are white slightly tinged with yellow. This colour changes, when exposed to the light of the sun: that part of the skin

on which the rays of the sun fall, is frequently of a brownish gray, while the unilluminated part is of a beautiful fawn colour, produced by the mixture of pale yellow, which the granular eminences assume, joined with a clear red, that then appears on the plain skin between the grains. This splendid colouring is usually distributed in blotches, between which the grains appear mixed with blue and greenish, and the flat skin is reddish. At other times the whole skin seems of a beautiful green, spotted with yellow. When touched, it often becomes suddenly spotted all over with pretty large blackish blotches, mixed with some green; but it is now thoroughly ascertained, that it by no means assumes the colours of the bodies which are around it, and that those which it accidentally presents are not extended over the whole of its body, as was formerly imagined. It was likewise believed to have the power of living on air alone; but this absurd belief is now exploded.

### THE TOAD.



THIS animal, which is easily recognised by its livid appearance and sluggish and disgusting movements, is, in figure, nature, and appetites, like the frog. In Europe it is of a considerable size, the smallest individuals measuring from four to six inches in length.

Its eyes are remarkably beautiful, having a brilliant reddish gold-coloured iris surrounding the dark pupil, and forming a striking contrast with the remainder of its body.

These animals are so extremely numerous in Carthagera and Porto Bello in America, that in rainy weather, not only all the marshy grounds, but the gardens, courts, and streets, are almost covered with them; so much so, that many of the inhabitants believe that every drop of rain is converted into a Toad. If it happen to rain during the night, all the Toads quit their hiding places, and then crawl about in such numbers, as almost literally to touch each other, and hide the surface of the earth; on such occasions it is impossible to stir out of doors without trampling them under foot at every step.

When irritated, this creature emits from various parts of its skin a kind of frothy fluid that, in our climate, produces no further unpleasant symptoms than slight inflammation, from its weakly acrimonious nature. It is persecuted and murdered wherever it appears, on the supposition merely that because it is ugly it must in consequence be venomous; and its reputation as a poisonous animal obtained for it among the superstitious so many preternatural powers, that the reputed dealers in magic art are reported to have made use of it in their compounds. It is, however, a perfectly innoxious animal, and may be rendered tame and docile.

The female Toads deposit their spawn early in the spring, in the form of necklace-like chains or strings of beautifully transparent gluten, three or four feet in length, enclosing the ova in a double series throughout. These have the appearance of so many jet black globules; they are, however, nothing more than the larvæ, or tadpoles, lying in a globular form. These break from their confinement in about a fortnight, and afterwards undergo changes very similar to the

tadpoles of the frog. They become complete about the beginning of autumn, when the young animals are frequently to be seen in immense multitudes.

The Toad becomes torpid towards the conclusion of autumn, and remains in that condition during the whole of the winter months. There is one singular but well authenticated circumstance relative to it, for which naturalists have hitherto been unable to account, and which long excited curiosity. It has repeatedly been found alive in blocks of stone, marble, and other solid substances, in which it must have been imbedded for centuries.

### THE FROG.



THE common Frog is known throughout Europe, and in the parts of America, about Hudson's Bay, as far north as the sixty-first degree of latitude, being almost every where seen in moist situations, or wherever it can command a sufficient quantity of insects, worms, &c. on which it feeds. In colour it varies considerably, but its general tinge is olive brown, variegated on the upper parts of the body and limbs with irregular blackish spots; those on the limbs being mostly disposed in a transverse direction: beneath each eye is a longish mark or patch, reaching to the setting on

of the fore legs, and which seems to form one of its principal distinctions.

It is generally in the month of March that the Frog deposits its ova or spawn, consisting of a large heap or clustered mass of gelatinous transparent eggs, in each of which is imbedded the embryo, or tadpole, in the form of a round black globule. The spawn commonly lies more than a month, or sometimes five weeks, before the young or tadpoles are hatched from it; but during this period each egg gradually enlarges in size, and a few days before the time of exclusion, the young animals may be perceived to move about in the surrounding gluten.

The form of the Frog is light and elegant, and its appearance lively; the limbs finely calculated for the peculiar motions of the animal, and the hind feet strongly webbed, to assist its progress in the water, to which it occasionally retires during the frosts of winter, when it lies in a state of torpidity, either deeply plunged in the soft mud at the bottom of stagnant waters, or in the hollows beneath their banks, till it is awakened from its slumber by the return of spring. In the countries round Hudson's Bay, it is often found frozen hard, in which state it is as brittle as glass; yet, by wrapping it in warm skins and exposing it to a slow fire, it will return to life. The Frog is supposed to attain its full growth in five years, and to live fifteen.



# NATURAL HISTORY

## OF

### INSECTS.

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THE name of Insect is derived from the circumstance of the individuals which bear it having, in general, a separation in the middle of their bodies, by which they are cut, as it were, into two parts. Insects breathe through pores arranged along their sides, and have no heart or arteries. Nearly all of them, with the exception of spiders, and a few others of the apterous tribe, undergo three changes at different periods of their existence. The animal is first produced as an egg; from these eggs proceed the larvæ, grubs, or caterpillars; which, as soon as they are perfected, take a new form, that of the pupa or chrysalis; and lastly, from the chrysalis emerges the perfect animal.

By Linnæus Insects are divided into seven orders:—

1. *Coleopterous Insects*, so called from two Greek words, which signify the wings being sheathed. These have crustaceous elytra, or shells, which shut together, and form a longitudinal suture down the back. Such as Beetles, Ladybirds, and Earwigs.

2. *Hemipterous Insects*, of which the Cockroach and Locust may be taken as specimens. They are so named because their upper wings are half crustaceous and half membranaceous, not divided by a longitudinal suture, but incumbent on or crossed over each other.

3. *Lepidopterous Insects*, or scaly-winged, because the four wings are covered with fine scales, seeming like powder or meal. This class includes Butterflies and Moths.

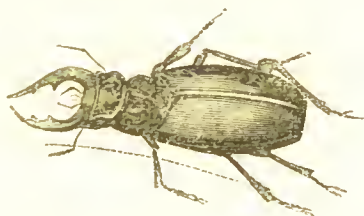
4. *Neuropterous Insects*. These take their denomination from their having four membranaceous, transparent, naked wings, in which the membranes cross each other like network; as is to be seen in the Dragon Fly. The tail is stingless.

5. *Hymenopterous Insects*. These, in general, have four membranaceous naked wings, not so much resembling network as the wings of the Neuroptera, and, except in the male, the tail is armed with a sting. The Bee, the Wasp, and the Ant, are of this tribe. In some of the genera, the neuter, and in others the males and females, are without wings.

6. *Dipterous Insects*. These, as may be seen in the House Fly and the Gnat, have only two wings, each of which has a poiser or balancer.

7. *Apterous Insects*. Such as are wingless. An order which includes many tribes: among these are the Flea, the Spider, the Scorpion, the Crab, and the Centipede.

## THE GREAT STAG BEETLE.



THIS insect, which is the largest that Great Britain produces, belongs, in the Linnæan classification, to the order Coleoptera. From the point of its jaws to the extremity of its abdomen, it sometimes measures three inches. It is of a dark brown colour, with the exception of the jaws, which are occasionally as red as coral. When this occurs the animal has a very beautiful appearance. The Stag Beetle may easily be distinguished by these jaws, which resemble the horns of a stag. In some districts of the south of England it is very common in oak and willow trees. It flies abroad, and feeds upon the leaves, only in the evening, and is principally seen in the month of July. The mandibles, those of the male in particular, are so strong that it can pinch with them severely. It is a popular belief in Germany that this insect carries burning coals into houses, by means of its jaws, and that many dreadful fires have been caused by this singular propensity. On this subject, however, we may be allowed to be incredulous. One very curious circumstance respecting the Stag Beetle is an ascertained fact. Mr. Bingley frequently found several of their heads near together, and alive, while the trunks and abdomens were no where to be seen; and at other times only the abdomens were gone, and the heads and

trunks were left. As the insect does not fly until the birds have retired to rest, it appears to be difficult to account for this. A friend of Mr. Bingley suggested that, as they are among the fiercest of the insect tribes, it might arise from their fighting with each other; but he confessed himself at a loss to discover what became of the abdomens. Indeed, his mode of explaining the matter strongly reminds us of the Irishman's story of two cats, which being shut up in a garret at night, fought and devoured each other; so that, in the morning, nothing was to be found of them but the tip of an ear and part of a tail.

### THE COCKCHAFER.



THIS well known and mischievous insect is of the Beetle tribe. Towards sunset it may be seen flying about places where there are trees, and it not unfrequently strikes the faces of persons who are walking. It eats the leaves of all kinds of fruit trees, and of the willow, beech, lime, and sycamore. Being excessively voracious, Cockchafers, when numerous, become an absolute scourge. In 1688 the county of Galway was infested by such innumerable swarms of them that they entirely darkened the air for the space of two or three square miles, and made the trees, for a circuit of many miles, as bare at midsummer as though it had been the depth of winter. It is, however, not often that they are seen in such numbers. But, in their larva state, they every year do very serious injury to the farmer. In that form they live four years underground, during

the whole of which time they live on the roots of trees and plants, and, as they are insatiably voracious, their ravages are often highly destructive. Crowds of them work between the soil and the turf in rich meadows, and so completely devour the roots of the grass that the turf will roll up as easily as if it had been pared off with a turving knife. Many acres of beautiful meadow land are thus ruined. Were it not for the birds, particularly the rooks and jays, the Cockchafer would multiply to such a degree as to become an intolerable nuisance.

### THE GIGANTIC COCKROACH.



THE above insect is the largest of its species, and is almost the size of a hen's egg. It is a native and plague of the warm parts of Asia, Africa, and South America. This, and indeed all the other species of Cockroaches, are a race of pestiferous beings, equally noisome and mischievous to natives or strangers. These filthy and voracious insects fly out in the evenings, plunder and defile all kinds of victuals, dressed and undressed, and damage all sorts of clothing, every thing made of leather, books, paper, and various other articles. They fly into the flame of candles, and sometimes into the dishes; and they are very fond of ink

and of oil, into which they are apt to fall and perish. In this case they soon turn most offensively putrid, so that a man might as well sit over the putrid body of a large animal as write with the ink in which they have died. They often fly into the faces or bosoms of persons, and their legs being armed with sharp spines, the pricking excites a sudden horror not easily repressed. In old houses they swarm by myriads, making indescribably nasty every part where they harbour, which in the daytime is in dark corners, behind all sorts of clothes, in trunks, boxes, and in short every place where they can lie concealed. In old timber and deal houses, when the family is retired at night to sleep, this insect, among its other disagreeable properties, has the power of making a noise which very much resembles a pretty smart knocking with the knuckle upon wainscoting; in the West Indies it is therefore frequently known by the name of the Drummer.

### THE COMMON LOCUST.



THIS insect, which is of the hemipterous order, is about three inches long, and has two horns or feelers, an inch in length. The head and horns are of a brownish colour; it is blue about the mouth, and also on

the inside of the larger legs: the shield that covers the back is greenish; the upper side of the body brown, spotted with black, and the under side purple; the upper wings are brown, with small dusky spots, with one larger at the tips; the under wings are more transparent, and of a light brown tinged with green, with a dark cloud of spots near the tips.

These noxious insects fly in such numbers as to seem at a distance like a dark cloud, which, as it approaches, almost excludes the light of day. It often happens that the husbandman sees them pass over without doing him any injury; but in this case they only proceed to settle on some less fortunate country. Wherever they alight, they make dreadful havoc among the vegetation. In the tropical climates their presence is not attended with such destructive consequences as in the southern parts of Europe; for in those, the vegetative power is so strong and active, that an interval of only a few days will sometimes repair all the damage: but in Europe their ravages cannot be obliterated till the succeeding year. In their flights they have been known to fall into the sea in such innumerable myriads, as to form banks on the shore of three or four feet in height, and fifty miles in length.

The CRESTED LOCUST differs from the preceding, and is an inhabitant of the East: it is a highly beautiful animal, being of a bright red, with the body annulated with black, and the legs varied with yellow; the upper wings are marked with variegations of dark and pale green; the lower with transverse undulated streaks. The length of this species, from head to tail, is about four inches; and the expanse of wings from tip to tip, when fully extended, hardly less than seven inches and a half.

Of the Locust tribe there are upwards of two hundred species, some of which are used as an article of food by the natives of Africa and India.

## THE HOUSE CRICKET.



THIS insect is an inhabitant of almost every house. Its wings are tailed and longer than the wing-cases, the body is of a light green colour shaded with brown; and it is provided with six feet. It is said to delight in new built houses; being, like the spider, pleased with the moisture of walls; and besides, the softness of the mortar enables them to burrow and mine between the joints of the bricks or stones, and to open communications from one room to another. Yet they are particularly fond of kitchens and bakers' ovens, on account of their warmth. Residing as it were in a torrid zone, they are always alive and merry; and a good Christmas fire is to them like the heats of the dogdays. Though they are frequently heard by day, yet their natural time of motion is only in the night. As soon as it grows dusk, the chirping increases, and they come running forth, of all sizes, from the magnitude of a flea to that of their full growth. As one would suppose them to be (from the situations which they inhabit), they are a thirsty race, and show a great propensity for liquids, being found frequently drowned in pans of water, milk, broth, or the like. Whatever is moist they affect; and therefore often gnaw holes in wet woollen stockings and aprons that are hung to the fire. These crickets are not only very thirsty, but very voracious; for they will eat the scummings of pots, yeast, salt, and crumbs of bread; and any kitchen offal or sweepings. In summer evenings they have been observed to fly out of the window, and over roofs of houses: this feat of activity accounts for the

sudden manner in which they often leave their haunts, as it does for the method by which they come to houses where they were not known before. It is remarkable that many sorts of insects seem never to use their wings but when they have a mind to shift their quarters and settle new colonies. When in the air, they move in waves or curves like woodpeckers, opening and shutting their wings at every stroke, and so are always rising and sinking. When they increase to a great degree, they become noisome pests, flying into candles, and dashing into people's faces; but may be blasted with gunpowder discharged into their crevices and crannies. Cats catch House Crickets, and playing with them as they do with mice, devour them. Crickets may be destroyed like wasps, by phials half filled with beer, or any liquid, and set in their haunts; for being always eager to drink, they will crowd in till the bottles are full. A popular prejudice, however, frequently prevents their being driven away and destroyed: the common people imagine that their presence brings a kind of luck to the house while they are in it, and think it would be hazardous to destroy them.

### THE MOLE CRICKET.

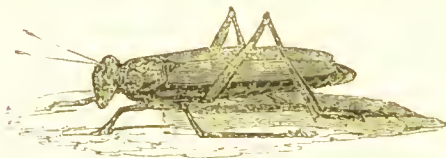
THIS little creature, which among the insect tribes is a complete representative of the mole, is two inches and a half in length, and three quarters of an inch in breadth. Its fore feet are broad, and strong; and in their formation and position, bear a great resemblance to the fore feet of that animal. They are used for precisely the same purpose as those of moles, to burrow under the surface of the ground, where the insect commonly resides; and so expertly does it use them, that it can penetrate the earth with even greater expedition than the mole.

The female forms a cell of clammy earth, about the

size of a hen's egg, closed up on every side, and as large within as two hazel nuts. The eggs, amounting to nearly a hundred and fifty, are white, and about the size of carraway comfits; they are carefully covered, as well to defend them from the injuries of the weather as from the attacks of one of the species of black beetles, which often destroys them. The female places herself near the entrance of the nest, and, whenever the beetle attempts to seize its prey, the guardian insect catches it behind, and bites it asunder.

These insects, at the approach of winter, remove their nest to so great a depth in the earth as to have it always lower than the frost can penetrate. When the mild season comes on, they raise it in proportion to the advances of that favourable time, and at last elevate it so near to the surface as to render it susceptible both of air and sunshine; should, however, the frost return, they again sink it to its proper depth.

### THE GRASSHOPPER.



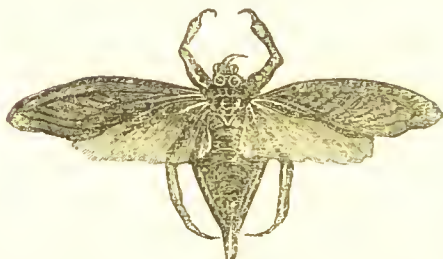
THE Grasshopper has a head somewhat resembling that of a horse, and is of a lively green colour. It has four wings and six legs, the hinder legs being much longer than the others, in order to assist the insect in leaping. The corslet is armed with a strong buckler. The Grasshopper has three kinds of stomachs, which induces some naturalists to suppose that it chews the cud. The insect is oviparous, and lays about a hundred and fifty eggs, which are white, oval,

of a horny substance, and nearly the size of aniseeds. The female dies soon after she has produced them. This insect feeds principally on grass, and makes a chirping sound, which is imagined to be caused by the fluttering of the wings. If roughly handled, it bites with considerable sharpness.

### THE GREAT LANTERN FLY.

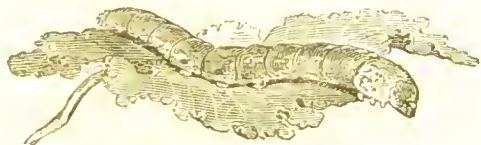
THIS is undoubtedly one of the most curious of insects: it is of a very considerable size, measuring nearly three inches and a half from the tip of the front to that of the tail, and about five inches and a half from wing's end to wing's end when expanded: the body is of a lengthened oval shape, roundish or subeylindric, and divided into several rings or segments: the length is nearly equal to the length of the rest of the animal, and is oval, inflated, and bent slightly upwards: the ground colour is an elegant yellow, with a strong tinge of green in some parts, and marked with numerous bright red brown variegations in the form of stripes and spots: the wings are very large, of a yellow colour, most elegantly varied with brown undulations and spots, and the lower pair are decorated by a very large eye-shaped spot on the middle of each, the iris or border of the spot being red, and the centre half red and half semitransparent white: the head or lantern is pale yellow, with longitudinal red stripes. This beautiful insect is a native of Surinam and many other parts of South America, and during the night diffuses so strong a phosphoric splendour from its head or lantern, that it may be employed for the purpose of a candle or torch; and it is said that three or four of these insects tied to the top of a stick, are frequently used by travellers for that purpose. A single one gives light enough to enable a person to read.

## THE SURINAM BUG.



THE genus to which this belongs is divided into different sections, the whole number of species being above one hundred. The common Bed-bug has no wings; but the field bugs have all wings, and inhabit plants as various as their shape and colour. The Surinam Bug, thus named by Madame Merian, who first discovered this frightful insect at Surinam, and figured it from the life in her inimitable collection, from which our figure is taken, is the largest known species of the cimex tribe, measuring three inches and a half from head to tail, and six inches in circumference. It is of a rich brown colour, armed with a single sharp spine on the head, and another at the anus; the eyes are black and very prominent; there are two large dark brown spots on the thorax, about the size of peas; two others more oblong behind; and others of various forms and sizes on the fore legs; the elytra are reticulated with white, and are very thick and strong; the interior wings are membranaceous, and of a delicate straw colour. This is not only the largest, but the most destructive and voracious, of the genus, attacking and devouring, in its creeping state, toads, frogs, lizards, aquatic insects, and even fish; and, in its winged state, preying upon reptiles, birds, and the larger animals, and even on the weaker individuals of its own family.

## THE CATERPILLAR.



THE Caterpillar, as we have already mentioned, is a name common to the larvæ of many varieties of insects. In September they may be seen in great abundance. They keep together under the cover of a fine web, which they spin to defend themselves from the inclemency of the weather; and in the protection of this they pass the winter months. During this time they are so nearly reduced to a torpid state, as to require no food, nor do they venture out of their general covering till invited by the warmth of the spring. As they afterwards increase in size, they spread abroad in search of food; but their local attachment is very remarkable, for neither the Caterpillar nor even the butterfly will stray far from the place where it was bred. Numbers of the latter may sometimes be observed on the wing, in a small spot of swampy or marsh land, when not one of them is to be met with in any of the adjacent places. As they fly very low, and frequently settle, they are easily caught. The Caterpillars are generally at their full growth about the last week in April; when this takes place, they suspend themselves by the tail to change into chrysalids, in which state they remain fourteen days. Their mode of suspension is a singular instance of the extraordinary power of instinct. They first draw two or three blades of grass across towards their top, and fasten them together by means of their silk: then hang themselves beneath the centre of these, each having its own little canopy. By this means they are not

only hidden from the sight of birds, but defended in a great measure from the damage they might otherwise sustain from windy and boisterous weather.

### THE SILKWORM.

THIS wonderful insect, which is the larva of a moth of no great beauty, is found in a native state on mulberry trees in China, and some other of the eastern countries, from whence it was originally introduced into Europe in the reign of the Emperor Justinian. It is, however, at this time become, in a commercial view, one of the most valuable of all insects; affording those delicate and beautiful threads that are afterwards woven into silk, and used in almost all parts of the world.

In the warmer climates of the east, these insects are left at liberty upon the trees, where they are hatched, and on which they form their cocoons; but in cooler countries, where they have been introduced, they are kept in a room with a south aspect, built for the purpose, and fed every day with fresh leaves. Their eggs are of a straw colour, and each about the size of a pin's head. At its birth the larva or worm is entirely black, and about as long as a small ant; and it retains this colour eight or nine days. The worms are put on wicker shelves, covered first with paper, and on this with a bed of the most tender of the mulberry leaves. Several ranges are placed, one above another, in the same chamber, about a foot and a half apart. The scaffolding for these ranges should, however, be in the middle of the room, and the shelves not too deep. Near the expiration of thirty days, they begin to make their cocoons, after which they prepare for their final dissolution. The cone, or cocoon, somewhat resembles a pigeon's egg, and the whole length of the thread which it contains will sometimes measure three hundred yards.

## THE PAINTED LADY BUTTERFLY.



BUTTERFLIES are of the Lepidopterous order. The Butterfly may be said to consist of three parts; the head, the corslet, and the body. The body is the hinder part, and is composed of rings, which are generally concealed under long hairs with which that part of the animal is clothed. The corslet is more solid than the rest of the body, and in which the fore wings and the legs are fixed. They have six legs, but make use of only four; the two fore feet are covered by the long hairs of the body, and are sometimes so much concealed, that it is difficult to discover them. The eyes of Butterflies have not all the same form; in some they are the larger portion of a sphere; in others they are but a small part of it, and just appearing from the head; in some also they are small, and in others large: but in all of them, the outer coat has a lustre, in which may be discovered all the various colours in the rainbow. It has, likewise, the appearance of a multiplying-glass, having a great number of sides, or facets, in the manner of a brilliant cut diamond. In this particular, the eye of the Butterfly and of most other insects correspond.

The wings of Butterflies are very different from

those of any other fly: they have four in number, and though two of them be cut off, the animal has still the power of flying. They are, in their own substance, transparent, but owe their opacity to the beautiful dust with which they are covered.

The Painted Lady Butterfly is a species not very common. In some seasons, these insects appear in considerable numbers, and then again are not seen for several years. In point of beauty, this has the highest claim of all; its wings are indented, orange above, variegated with black and white beneath; four eyes on the posterior pair. Its larva feeds on nettles, thistles, docks, and other herbage, by the sides of ditches, and changes its state about the middle or latter end of July.

### THE SPHINX CAROLINA.



THE larva of this scarce moth is green, with lateral spiracles on every segment, surrounded by a purple ring, and the caudal spine is of the same colour. When full grown, they are thickest in the middle; their horn or tongue is generally curled; and they have two feelers. Their wings are clouded, entire, and the posterior margin is dotted with white; the abdomen has five pair of fulvous spots.

In America, we are informed, that they are distinguished by the name of Tobacco Moths, on account of their feeding entirely on that plant.

## THE ELM MOTH.

THE wings of this insect are white, with a double row of pale black spots across the middle : a ferruginous brown spot at the base, and another at the posterior margin of the first pair ; likewise a similar spot on the interior margin of the second pair.

This species bears some affinity to the Currant Moth. It is very rare, and has been hitherto found only in Yorkshire. It appears the third week in June. The larva feeds on the elm ; it is green, streaked with black, and has a black head.

## THE DRAGON FLY.

THIS insect, which is extremely beautiful, may be given as a specimen of the Linnæan order *Neuroptera*. It is armed with jaws, generally more than two in number, and the tail of the male is furnished with a forked process. Dragon Flies are of very varied and brilliant colours ; green, blue, crimson, scarlet, and white, and sometimes all these meet in one individual. Their four wings are large and of a delicate texture, and their eyes are very bright. The Great Dragon Fly is about four inches long, and proportionally thick. All of this tribe are rapid in their motions, and exceedingly voracious. They prey on insects.

## THE COMMON BEE.



THE Common or domestic Honey-bee, which belongs to the order *Hymenoptera*, is an insect whose exertions

afford us two of the principal necessities of life, food and light; and although they appear to gather the honey and wax merely for their own comfort, yet the industry of man has turned it to his own advantage. The Bee is a small insect of a brown colour, covered on the corslet and belly with hairs; it has four wings and six legs, the thighs are also covered with strong bristles. Each Bee is furnished with a trunk or proboscis, commonly folded up, but capable of being extended at pleasure. It is with this instrument that they collect their food; not by pumping or sucking, but by licking it from the nectaria of flowers. Observation has proved that it is only the queen and the labouring Bee that have stings; and this provision of a sting is perhaps as curious a circumstance as any attending the Bee. The apparatus itself is of a very curious construction, fitted for inflicting a wound, and at the same time conveying a poison into that wound. They have been known to pierce the palm of the hand, which is covered with a thick skin, as deep as the one-twelfth of an inch.

There are, of the Domestic Bee, at certain seasons of the year, three kinds in every hive; the males, the females, and the Bees without sex. The latter every person is acquainted with; their number is beyond comparison greater than that of the other two kinds. Nature seems to have destined them solely for the purpose of labour; and the whole drudgery of the hive lies upon them; hence they have properly been termed Working Bees, or Labourers. It is only during one or two months in the summer, when the hive is most crowded, that males are found in it; and even then they do not amount to a tenth part of the whole: but they are of a superior size. During the whole course of the season, except a few days, there is only a single female to be discovered in the most numerous hive. Her fecundity, however, is so prodigious, that she is soon capable of multiplying her family to such a degree that the hive can no longer contain it. To

her the whole swarm, from ten to twenty thousand, owe their birth. Her residence is generally in the interior apartments of the hive; when she shows herself she is readily known by her size, being longer than even the male Bees, but inferior in thickness. From a number of well attested experiments and observations, it appears that her life is more precious than any of the rest; for she is the soul of all their operations. If a hive be deprived of her, however numerous, it will undertake no labour; and the individuals will hardly give themselves the trouble of collecting their daily subsistence. A swarm that was busy from morning to night constructing cells, and collecting wax, immediately upon this accident seem to forget that the flowers contain their food; they scarcely stir from the hive, construct no new cells, nor even finish what was begun; but the moment she is restored, their wonted spirit and activity are resumed by the whole swarm.

This queen, without the cares of government, is indeed busily occupied, but in functions of a different kind; and these are, the production of a vast number of eggs, which she continues to drop one after another, into the empty cells, during a considerable part of the summer. This animal, which is so amazingly productive, on being opened, has been found to contain upwards of five thousand eggs, all of a size sufficient to be perceptible. If we make allowances for those that were already dropped, and many more not yet formed, so as to become perceptible, we shall no longer deem it incredible, that this animal should in one season become the mother of so many thousands. In three weeks time, the young Bees are ready to make their appearance as winged animals, and their first employment in that state, is to gnaw off the wax with which the entrance of their cells had been secured.

When the Bees begin to work in their hives, they

divide themselves into four companies : one of which roves in the fields in search of materials ; another employs itself in laying out the bottom and partitions of the cells ; a third is employed in making the inside smooth, from the corners and angles ; and the fourth company brings food for the rest, or relieves those who return with their respective burdens. Their diligence and labour are so great, that in a day's time, they are able to make cells, which lie upon each other, numerous enough to contain three thousand Bees. When the Bees at any time rest themselves, there is something very particular in their method of taking their repose : it is done by collecting themselves together in a heap, and hanging to each other by their feet : they sometimes extend these heaps to a considerable length.

### THE WASP.



THIS well known and troublesome insect resembles the bee in some particulars, though it differs from it in others. As among the bees, so among the Wasps, there are three different kinds of flies, and the greatest share of labour devolves on the neuters, who, however, unlike the nenter bees, are not the only workers, the females and males taking some part. The nest of the Common Wasp is always built under the surface of the earth, and is sometimes formed in the forsaken

dwelling of a mole. It is of a roundish form, twelve or fourteen inches in diameter, and is curiously constructed. The Wasp is a hymenopterous insect.

With respect to the dipterous insects, it is only necessary to point out the Great and the Common Flesh Fly, as furnishing illustrations of their characteristic qualities.

### THE COMMON SPIDER.



THIS insect is of the apterous order, and there are several species of it, but every kind has two divisions in its body. The fore part, containing the head and breast, is separated from the hinder part, or belly, by a very slender thread, through which, however, there is a communication from one division to the other. The fore part is covered with a hard shell, as well as the legs, which adhere to the breast; the hinder part is clothed with a supple skin, beset all over with hair. They have several brilliant and acute eyes all round the head; these are sometimes eight in number, sometimes but six; two behind, two before, and the rest on each side. Like all other insects, their eyes are immoveable, and they want eyelids; but this organ is fortified with a transparent horny substance, which at once secures and assists their vision. As the animal procures its subsistence by the most watchful attention, so large a number of eyes is necessary to give it the earliest information of the capture of its

prey. They have all eight legs, jointed like those of lobsters, and similar also in other respects. But its principal qualification is making its web, upon which means its existence entirely depends.

The females lay six or seven hundred eggs in bags, which they make for the purpose, lined within side by a down which they pluck from their own breast. These eggs are generally deposited in August or September, and about sixteen days afterwards the young are hatched.

### THE GREAT AMERICAN SPIDER.

THIS is one of the largest species of the tribe. Its back is covered with a hard, thick, brown coat, hollowed at the sides, and cleft transversely across the middle, as if it had a hole in that place. The head is small and with difficulty distinguished from the corslet. The mouth is furnished with brown, hard, crooked teeth: the body is large and round, growing out into two parts. Except the back, the whole body and the feet are covered with long bushy hair. The extremities of the feet are smooth and large, like the toes of a dog.

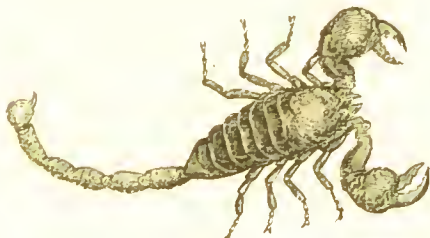
This hideous species of the Spider tribe preys principally on small birds: in doing of which, it tears them to pieces to get at their blood, and afterwards sucks their eggs.

### THE BARBARY SPIDER.

THIS species is as large as a man's thumb, and is a native of Barbary. It inhabits hedges and thickets: its webs have large meshes, and it resides in the centre upon its nest. The snares are spread for large flies, wasps, drones, and even locusts. The animal

which it entangles is soon killed by the Spider, and partly eaten if the Spider be hungry; the rest is concealed under some neighbouring dry leaves, covered with a kind of web, and a blackish glue in great abundance. Its larder is often plentifully stored. Its nest is about the size of a pullet's egg, divided horizontally, and suspended by the threads of the insect, which are of a silvery white, and stronger than silk. It carries its eggs in a little bag under its belly, from which the young ones come out, and for a time live in the same web in amity; but, when grown up, are mortal enemies. Whenever they meet they fight furiously, and their battle ends only with the death of the weakest; whose dead body is carefully stored away in the larder.

### THE SCORPION.



THE Scorpion has a distant resemblance in shape to the lobster, but is infinitely more ugly: it also casts its skin as the lobster does its shell. They have eight legs, besides two claws and eight eyes, three of which are placed on each side of the thorax, and two in the middle. The head appears, as it were, jointed to the breast; and the parts notched into each other answer

the purpose of teeth in breaking the food. On each side of the head is a four-jointed arm terminated by a claw, somewhat like that of a lobster. The belly is divided into seven segments, from the lowest of which the tail commences; this, in the common species, is armed with a hard pointed and crooked sting, the poison of which is very powerful. There are about nine different kinds of this dangerous insect, chiefly distinguished by their colours, some being yellow, brown, and ash-coloured; others of a rusty iron, green, pale yellow, black, claret colour, white, and gray. They are very common in all hot countries, and extremely bold and watchful. Far from running away at the approach of an enemy, it assumes an attitude of defiance. It erects its tail, makes ready its sting, waits the attack, and seldom ceases to resist till it is either killed or the foe retires.

The male and female Scorpions can be very easily distinguished, from the former being smaller and less hairy. The female brings forth her young alive, and perfect in their kind.

In Italy, Spain, and the south of France, they are frequently to be met with three inches in length, and are considered as the greatest pests that torment mankind. But the size and malignity of the Scorpions of Europe may be deemed trifling, when compared with that of the African monsters, which are distinguished by that name. Along the Gold Coast, they are sometimes found larger than a lobster, and their sting is inevitably fatal. From the language of Scripture too, we find that in the East these animals have long been formidable to mankind. In Batavia, they sometimes grow to the length of twelve inches; and in removing furniture, behind which they skulk, there is the utmost danger of being stung.

## THE SNAIL.



WORMS, according to the Linnæan system, are divided into five orders;—intestinal, molluscous, testaceous, zoophytes, and animalcules. The testaceous worms are subdivided into three classes; multivalves, bivalves, and univalves; to the latter of which belong all the individuals of the Snail tribe.

To the more transient observer, the Snail appears to be little more than a lump of inactive matter, loaded with a crustaceous covering, and totally insensible to all the objects with which it is surrounded; but, upon a more close inspection, it will be found to be possessed of every faculty that can possibly be requisite for the life it is formed to lead.

Their sizes are no less various than the countries and places in which they are found. They fill up all the intermediate gradations of magnitude from that of an apple or egg to the minuteness of a grain of wheat; and in that diversity of size, exhibit all the colours of the rainbow, with the polish of ivory or marble. The eyes of the Snail, which are four in number, are lodged in their horns, one at the end of each horn, which they can protrude and retract at pleasure.

Their eggs are round, white, and covered with a soft shell; they produce them in very great numbers, and they are stuck together by a kind of slime, not in a thick bunch, but rather, like a bunch of grapes. On

quitting the egg, the animal has a very small shell on its back, with only one convolution; this very soon enlarges, and the circles increase with the growth of the animal; never, however, exceeding four rounds and a half in the Garden Snail, though there are Sea Snails which sometimes have no less than ten. They chiefly subsist upon the leaves of plants and trees, but are very delicate in their choice.

Snails are great destroyers of wall fruit. Lime and ashes sprinkled on the ground where they most resort, will drive them away, and destroy the young brood of them: it is a common practice to pull off the fruit they have bitten; but this should never be done, for they will touch no other till they have wholly eaten up this if it be left for them; and their instinct is so wonderful, that they know exactly where to return to it.

## MADREPORE AND CORAL.

AMONG the zoophyte class we may just mention the Madrepora and Coral tribes, the minute insects composing which form reefs and islands of immense magnitude in the Southern Ocean. A very considerable part of the coast of New Holland is girdled by reefs of their construction, which rise to the surface from a vast depth. The Prickly Madrepora is the species by which this stupendous work is performed. Coral is generally obtained from the Mediterranean, but the most valuable is that of the East; it being larger in size and more compact in substance.

FINIS.











